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COMPUTERWORLD

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CLIENT/SERVER
Computer Associates promises a version of its mainframe systems management software for Microsoft's Windows NT operating system. *Page 2*

MIGRATION PAINS
IBM's recent decision to end support of its defunct Series/1 system is prompting users to scurry around for substitutes. *Page 6*

ADDRESSING SCHEME
Novell software helps NetWare users communicate on a public network similar to the Internet. *Page 8*

EXCLUSIVE SURVEY

ELUSIVE PAYBACK
Leaders of the nation's top corporations show new enthusiasm for what computers can do for their businesses. Nevertheless, fewer than half say they are getting their money's worth from their information technology investments. *Page 86*

Motorola extends paging

E-mail info linked to untethered users

By Joanie M. Wexler
BOYNTON BEACH, FLA

■ Corporate America's budding fixation with employee accessibility will likely grow more acute this week when Motorola, Inc. announces a wireless system that lets on-site, pager-toting users receive messages and calls forwarded from their PCs and telephones.

WIRELESS COMMUNICATIONS

Motorola's three-module Site Connect one-way paging system aims to untether the large percentage of users who are "locally mobile" — not at their desks but somewhere in their office buildings — from the communications devices in their work areas, Motorola said.

Although some productivity gains can be expected when workers no longer miss that make-or-break call, fax or electronic-mail message, users and analysts said the so-far vaguely described mechanisms for filtering traffic are paramount to the success of the system.

"We absolutely need filtering to screen calls, but [Motorola] hasn't explained yet how that will work exactly," said Moe Mustafa, telecommunications director at Tampa Electric Co. in Florida. The utility will soon begin a 1,200-user beta test for a Site Connect module called Site Call, which forwards a telephone caller's name or phone number to a user's alphanumeric

Motorola, *page 12*

PC factions rearming

Microsoft, Compaq confront PowerPC

By Michael Fitzgerald and James Daly

Last week's public embrace between Microsoft Corp. and Compaq Computer Corp. was an outward push for new standards that will simplify computing.

However, analysts said that on a strategic level, it is the beginning of Microsoft's response to the wide-ranging technology alliance of IBM, Apple Computer, Inc. and Motorola, Inc.

"This is clearly positioned against IBM and Apple, who have gone out of their way to say Microsoft does not play a significant role in the future," said Jeffrey Henning, an analyst at BIS Strategic Decisions in Norwell, Mass.

For users, the Microsoft/Compaq strategic partnership to coordinate hardware and software development [CW, April 12] should mean PCs that are easier to use and configure (see story page 18).

"Everybody ends up with operating systems that are more tightly linked to hardware and can more efficiently use the hardware," said Jesse Berst, editor of the "Windows Watcher" newsletter in Redmond, Wash.

Sheldon Laube, national director of information technology at Price Waterhouse, agreed: "I'm happy to see more integration and cooperation between vendors."

If factional warring

PC factions, *page 16*

Users align on license demands

By Neil Margolis
SANCBS MIRAOE, CALIF

Information systems executives from some of the largest corporations in the country last week joined under the banner of the Society for Information Management to fight what they consider to be unfair software licensing practices.

"This is a lobbying force," said Warren Harkness, Bose Corp.'s director of information services. "Until now, we've really been on our own."

In its first official position paper, SIM spelled out the terms that its 2,700-plus information technology executive members see as essential to an acceptable contract and urged vendors and users to work as partners in negotiating their individual deals.

Strength in numbers

Widespread adherence to the paper's terms could end up putting significant peer pressure on vendors that decline to comply, noted Richard Miller, director of corporate computer services at Pittsburgh-based Westinghouse Electric Corp.

Even without any formal policing procedure currently on the SIM agenda, Harkness said, "Word gets around."

"Speaking with the voice of 2,700 should make a difference," added Alan P. Haesche, director of Southern New England Telephone Co.'s Information Technology Center in New Haven, Conn.

According to SIM, software licensing and pricing practices have failed to keep pace with the commercial and technological realities that rule the IS executive's day. "It makes you want to rush to a window and yell out, 'We're mad as hell and we're not going to take it anymore,' " said William Zeitz, IS director at Wayne, N.J.-based American Cyanamid Co. and

Users align, *page 8*

Get up, stand up

SIM's position on software licensing includes the following:

- Unlimited site licenses, enterprisewide licenses and concurrent user licenses.
- Fair and flexible pricing.
- Unrestricted geographic scope.
- Open systems support.
- Software integration.
- Clearly defined transition and migration plans.

Source: Society for Information Management

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Recent events suggest the administrative burdens of your network could grow substantially.

STUART MCCALL

CLIENT/SERVER

Powersoft plans to upgrade its hot-selling client/server application builder today with features designed to propel it further into the enterprise-class development tools market. *Page 10*. Client/server is the way to go, right? Not necessarily. For some IS shops with lots of terminals and low CPU demands, the answer may be to stay with the current host-based system. *Page 99*

OPERATING SYSTEMS

It may seem like a battle of The Ghost vs. Vaporware right now, but **Windows 4.0** and **Windows NT** could find themselves in a face-off in 1994. *Page 2*

HOT BOXES

DEC hopes to rediscover its roots in the technical and scientific communities this week with the rollout of its hottest Unix boxes ever, which are based on the 64-bit **Alpha** microprocessor. *Page 4*. Vendors and users hop the local bus to get better graphics performance. *Page 41*. Users and analysts say **Tricord**'s latest superservers look good but wonder if corporate IS will take a flier on such technology, particularly when it comes from a vendor that is not a household name. *Page 49*

NETWORKS

IBM opens up APPN to other vendors, as promised. *Page 12*. Wireless networks could prove useful for the travel industry, although some customers of AMR's **Sabre** system question whether that technology should have been so high on AMR's priority list. *Page 55*. **Cisco Systems** and **SynOptics Communications** have scrapped plans to physically integrate their high-end routers and wiring hubs into one superbox. *Page 15*

SOFTWARE

Software asset management has progressed from being something that people talked about to a reality that provides tangible benefits. *Page 65*

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Software licensing

Ruling hits outsourcing

By Mark Halper and Thomas Hoffman
MINNEAPOLIS

■ A recent court ruling could encourage prospective outsourcing customers to shift the onus of software license compliance to their service vendor, analysts said.

The U.S. Court of Appeals for the Eighth Circuit in Minneapolis reversed a lower court decision and cleared the way for Computer Associates International, Inc. to pursue its breach of contract claims against National Car Rental Systems, Inc. That claim had been invalidated by a lower district court under the Federal Copyright Act.

CA claimed National was liable for allegedly allowing National's outsourcer and affiliate, Electronic Data Systems Corp., to use CA programs licensed to National for other customers. General Motors Corp. owns EDS and holds a majority stake in National.

Analysts and legal pundits said the ruling could be fodder for CA's separate action against EDS. An EDS spokesman said it would have no bearing on CA/EDS litigation.

However, Arnold S. Mazur, executive vice president at CA, said the appellate ruling will have a substantial impact on the pending case between CA and EDS, which is scheduled to be heard later this year in Dallas. "EDS has asserted the position, which has now been rejected, that breach of license is preempted by the Federal Copyright Act."

A National spokesman declined to comment on the case.

The ruling against National sends a clear message to outsourcing customers that they share in the responsibility for complying with CA's — and other vendors' — licensing policies, according to Kidder, Peabody & Co. analyst Chuck Phillips. He characterized the decision as a "small legal victory" for CA that clearly establishes user liability.

Legal experts said the decision not only buttresses software copyright protection for vendors such as CA but also sends a signal to users to familiarize themselves more closely with the specific terms of their licenses. "I think that any company such as National that needs to use its software beyond the immediate enterprise will look more closely now at the terms of their contracts," said Barry Rein, an attorney at Pennie & Edmonds in New York.

Phillips and other analysts said users might be able to protect themselves by negotiating indemnification clauses into their outsourcing contracts. "Customers are going to say to their outsourcing vendor, 'Have you done anything illegal, and if you have, can you indemnify us?' " observed Terry Quinn, managing director of Furman Selz, Inc. in New York.

While incumbent outsourcing customers may not be able to retrofit indemnity into their contract, prospective customers may negotiate it in, Phillips noted.

"For future customers, there's no reason for them not to do that, and that could raise EDS' potential liability," he said.

Legal litany

National Car Rental filed a "declaratory action" against CA on May 24, 1991, after CA threatened to sue National for improper use of software. National claimed its use of the CA programs did not breach the license agreement or infringe on CA's copyrights. CA then filed two counterclaims asserting that National's use of the programs — for the benefit of two affiliates — breached the agreement and infringed on its copyrights. After the court ruled that a suit for copyright infringement preempts additional claims of breach of contract against National, CA filed an appeal on Dec. 17, 1992.

End near for Apple/Microsoft suit

By James Daly
SAN FRANCISCO

The stage was set last week for the culmination of Apple Computer, Inc.'s lengthy copyright infringement suit against Microsoft Corp. and Hewlett-Packard Co. The presiding judge set May 5 as the date to resolve three remaining infringement issues.

The three visual elements in dispute are the appearance of the gray outline of a moving window, the change in appearance of moving icons and any nonfunctional artistic touches involved with overlapping windows or icons. Judge Vaughn R. Walker will require Apple to prove that Microsoft's and HP's works are virtually identical, not just substantially similar, to Apple's, according to court documents.

Apple sued Microsoft and HP in March 1988, charging that certain audio/visual elements of the Macintosh, including overlapping windows and the manipulation of icons, were not part of a 1985 agreement that gave Microsoft the right to use some of Apple's technology.

That pact was used in the production of Microsoft's Windows 2.03 and HP's New Wave, which is based on Windows.

Stanford University economist Robert Hall estimated that Apple has lost $5.55 billion in sales as a result of the alleged infringement.

Apple originally disputed the legality of 179 elements in the Windows and New Wave screen display, but last year Walker ruled that many of the screen graphics Apple claimed the pair violated were either not protected by copyright or come under the 1985 licensing pact.

The items in question were soon winnowed to 23, then 10, most recently four and now to three.

The potential ramifications of the case have made it the most closely watched litigation in the PC industry because it will test whether Apple can copyright the "look and feel" of its widely emulated software.

An Apple victory could have a dramatic effect because the Cupertino, Calif., firm would gain control over critical computer technology and squeeze large royalty payments out of Microsoft. An Apple defeat might ultimately lower some software prices because it could encourage developers to craft applications with capabilities similar to the Macintosh.

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Network Systems

CA gets on Microsoft bandwagon

Will port CA-Unicenter to Windows NT; users remain wary

By Thomas Hoffman
WASHINGTON, D.C.

Computer Associates International, Inc.'s disclosure last week that it will port its systems management software to Microsoft Corp.'s Windows NT could give fence-sitting users a reason to consider the still unproven operating system.

The reason. CA-Unicenter addresses major shortcomings of Windows NT and other next-generation operating systems that will be used to perpetuate client/server computing across the enterprise. By some unspecified time next year, CA-Unicenter will add powerful security, control and audit capabilities to networked NT servers, which are features that mainframe users have come to expect.

Nevertheless, many users said they are taking a cautious approach to the overhyped and delayed NT operating system. Reported problems with beta-test versions of NT and user anxiety about betting the farm on an initial release are making many users skeptical about placing their mission-critical applications on the unproven system.

User will wait

"If Microsoft produces a stable product and irons it out in a few years, we'll use it. But it's going to take time to shake it out," said Doug Walker, a senior programmer/analyst at Brigham Young University in Provo, Utah, which recently completed testing CA-Unicenter on Hewlett-Packard Co.'s HP/UX Unix environment and plans to install the software when it begins shipping next month.

NT test drive

The rapid growth of interest in downsizing by CA customers during the past year leads Aberdeen Group to conclude that more than 50% of CA's Unicenter mainframe clients "would at least want to kick the tires of Unicenter on NT," said Peter Kastner, a vice president at the Boston consultancy. Analysts said they believe CA has more than 1,000 CA-Unicenter sites, most of which are in large MVS data centers. Less than 10% of the Windows NT base will require Unicenter in 1993 or 1994, Kastner said, estimating that large-scale Windows NT server deployment — in excess of 10,000 servers — will not occur until at least 1995.

CA-Unicenter on NT would make Microsoft's future operating system more attractive to Dick Kane, department head for technical infrastructure and support at ITT Hartford Life Cos. "That would be of significant interest to us. We're looking for industrial-strength systems management tools down to the PC LAN and desktop environment," Kane said.

CA's Charles Wang *(left) and Microsoft's Bill Gates agree NT will enhance CA-Unicenter*

Analysts said they liked CA's move but noted that NT still has a lot to prove before CA-Unicenter for NT ships.

"It amazes me how many people are waiting around for NT. I don't think it will be ready for prime time right out of the gate since a lot of supporting software like CA-Unicenter will be needed," said Terrence Quinn, managing director of Furman-Selz, Inc., a New York brokerage that monitors the software industry.

Both CA and Microsoft provided scant detail about delivery timetables for the port, especially because shipping dates for Windows NT products have not been set in stone. However, the consensus among analysts is that the first NT products — including the Advanced NT server rumored to be priced at $3,995 — will likely begin shipping by this fall.

If so, a beta-test version of the CA-Unicenter port may be demonstrated at the Comdex/Fall '93 trade show in November, followed by general availability of the product in the first half of 1994.

"I think we'll have a better idea when we see [Microsoft's general availability] code," said Kurt Seibert, senior vice president of strategic business alliances at CA.

Extra products

According to Seibert, follow-on ports to the NT environment will likely include products such as manufacturing control software; warehouse distribution products; financial applications such as CA-Simply Accounting and CA-Masterpiece, and CA-Realizer, a Basic application development system already available for Windows.

There are no current plans to bundle CA-Unicenter with NT, but Seibert did not rule out the possibility. Months after CA had announced Unix ports of Unicenter to HP's, Sun Microsystems, Inc.'s and IBM's respective Unix environments last year, bundling plans were announced.

However, Peter Kastner, a vice president at Aberdeen Group, a Boston-based consultancy, warned that such a move by CA for the NT environment would be "financial suicide. If CA has Unicenter on a mainframe for $150,000 to $250,000, why in God's name would they shrink-wrap it on NT for a fraction of the cost?" he asked.

West Coast correspondent Christopher Lindquist and Washington, D.C., senior correspondent Gary H. Anthes contributed to this report.

Windows

Windows success could limit NT

By Christopher Lindquist
BELLEVUE, WASH.

● Call it a vaporware tornado. Microsoft Corp.'s Windows NT will not ship for at least a couple more months, and Windows 4.0 may not be available for more than a year, but some people are already beginning to wonder just what impact the next version of Windows on DOS will have on the NT market.

Windows 4.0 is being described as a bootable version of Windows that will still run on a 32-bit, preemptive multitasking, multithreaded version of MS-DOS referred to as MS-DOS 7.0. This updated Windows/MS-DOS combination will reportedly not contain some of the security, portability (including symmetric multiprocessor support) and networking features of Windows NT, but it will be able to run on a lower end machine with only 4M bytes of memory, according to sources at Microsoft.

At what cost success?

Some analysts are beginning to wonder if the success of Windows 4.0/MS-DOS 7.0 may come at the expense of Windows NT, at least on the desktop.

"I don't think many people have noticed that Microsoft is really competing with itself with NT and DOS 7.0," said Chris LeTocq, an industry analyst at Computer Intelligence/Infocorp in Santa Clara, Calif.

Others agreed. "I really think the biggest competitor for Windows NT is going to be Windows 4.0," said Jesse Berst, publisher of the "Windows Watcher" newsletter in Redmond, Wash.

Berst noted that if Windows 4.0 can do much of what Windows NT claims it will be able to, a user's urge to move to Windows NT could be lessened. "I think Windows 4.0 could prove surprisingly strong," he added.

Users are certainly interested in the idea of a 32-bit environment other than Windows NT, but they are still going to have to wait some time to see what the fruits of Microsoft's labors will be.

Nancy Smith, manager of system development at Florida Power & Light Co., said her company is currently working on an application that would benefit from preemptive multitasking.

Developers at Florida Power & Light are using OS/2 to create the application, but Smith said it will be deployed on Windows NT desktops because the firm anticipates that Windows environments will ultimately have the broadest array of software.

However, Smith added, Florida Power & Light might opt to deploy its application on Microsoft's other 32-bit environment, depending on what level of multitasking support Microsoft provides for DOS 7.0.

For its part, Microsoft seems unconcerned with the potential overlap. "We don't try and dictate who should move to what," said Microsoft Chairman and Chief Executive Officer Bill Gates at the recent MS-DOS 6.0 announcement in San Francisco. "We'll let people choose."

Microsoft is also reportedly spending considerable time talking with home users, who would be less concerned with the higher end features of Windows NT, about where Windows 4.0 should be headed.

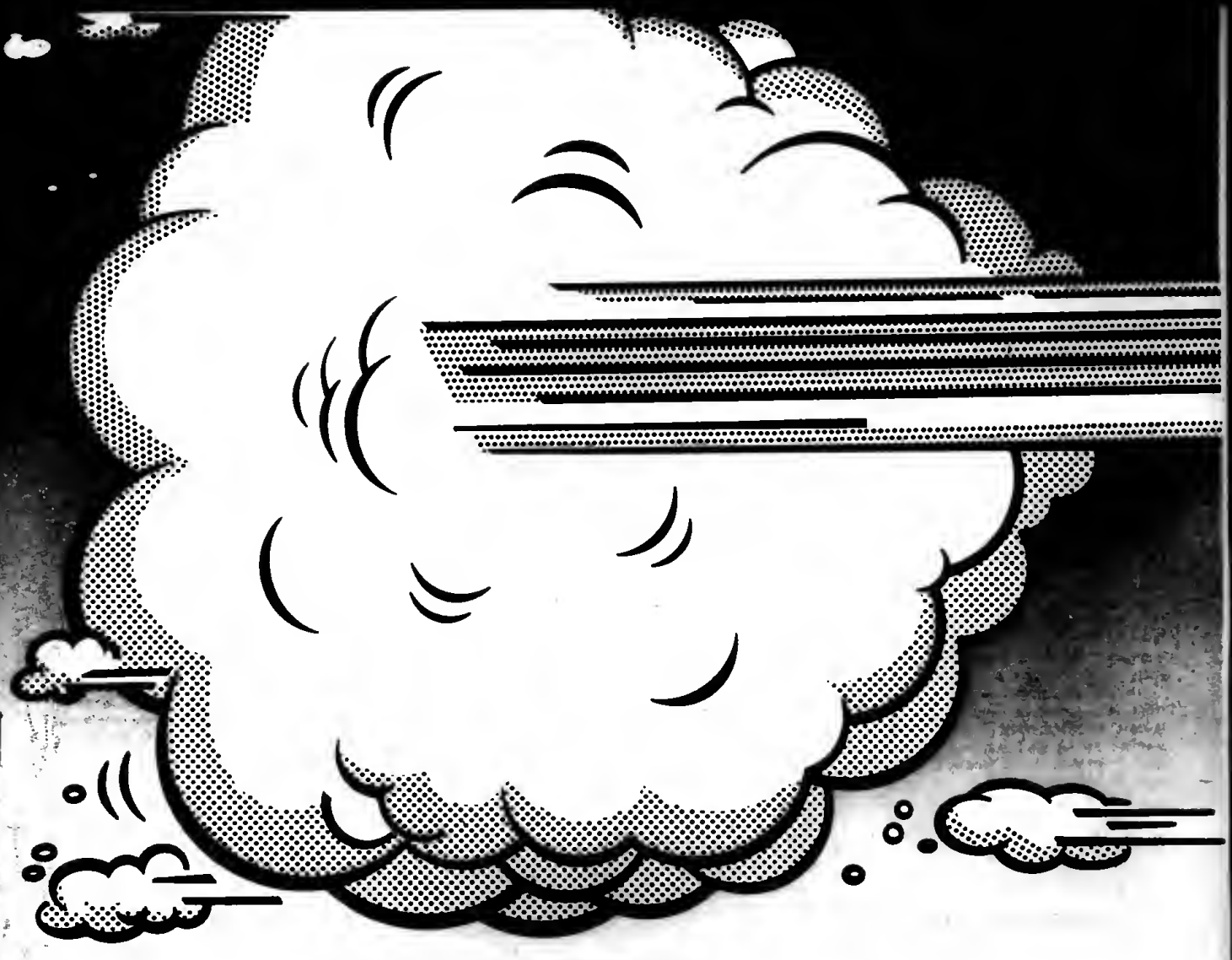
Some analysts said they feel there is certainly room for both Windows NT and Windows 4.0 in the future market.

Noah Ross, director of technology at Cap Gemini America, Inc. in New York, said there could be a place for an "NT Lite." If it "doesn't require the horsepower that NT does, it will be welcome," Ross said. In particular, he noted, a 32-bit Windows platform with fewer hardware requirements than Windows NT could make an ideal platform for developing client-side applications for NT servers.

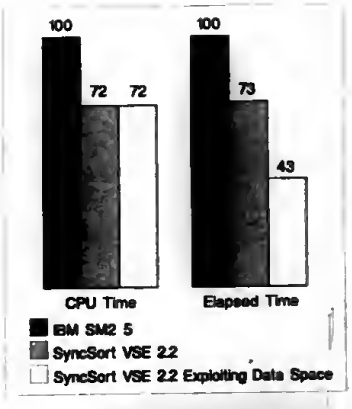
Senior editor Michael Vizard contributed to this report.

Deluxe features

While Windows 4.0 and MS-DOS 7.0 are both due to have preemptive multitasking and multithreading in 1994, Novell has announced that its Novell DOS will contain those features when it is released sometime this summer.



HERE'S WHERE WE LEAVE THE COMPETITION.



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Workstations

Alpha trumps rivals, for now

By Marytran Johnson
MAYNARD, MASS

As Digital Equipment Corp. leapfrogs its competitors this week in the Unix workstation price/performance race, users and analysts are watching closely for signs of a competitive comeback in an arena where DEC has always floundered.

With the introduction tomorrow of a trio of Alpha AXP Unix workstations, DEC is returning to its roots in the technical and scientific markets where Hewlett-Packard Co. and Sun Microsystems, Inc. have elbowed it aside in recent years.

DEC is billing its $70,000 Alpha AXP 500X workstation as the "fastest in the world," a claim analysts said will be true for at least the short term because the machine does knock HP off its leadership perch in processor speed and performance.

"For the first time in a long while, DEC's technology will clearly be at the top, fighting with the leaders," said James Brennan, an analyst at WorkGroup Technologies, Inc. in Hampton, N.H.

Still an open question, however, is whether hotshot performance numbers can sufficiently dazzle customers while DEC catches up on the software side. Currently, only 100 DEC OSF/1 Unix applications are available for the Alpha AXP workstation. And while DEC has vowed to have 500 DEC OSF/1 applications available by July, that still compares poorly with the several thousand applications offered by Sun, HP and IBM on their Unix-based systems.

"Even in the technical workstation market, DEC is going to be greatly challenged to regain a significant share," said Robert Herwick, an analyst at Hambrecht & Quist, Inc. in San Francisco. "But for people who want hot rods, DEC is selling them now."

Lack of plan a hindrance

Yet DEC's inability to articulate a clear, convincing Unix strategy has long been its Achilles' heel, some users pointed out.

"Whether DEC focuses on technical people or tries to grab market share across the board, it becomes immaterial if they don't know how to market Unix," said Robert Granvin, a user services specialist at the University of Minnesota's School of Statistics, which is currently comparing DEC Alpha systems and Silicon Graphics, Inc. workstations.

"They will have to manage to miss their foot when they pull the trigger, and it's not clear whether DEC's aim is that good," quipped Tony Carrato, an official at the Digital Equipment Computer Users Society and a principal consultant at Mile High Information Services, Inc. in Denver. Carrato added, however, that his own consulting clients are paying close attention to Alpha price/performance numbers and starting to include DEC in project evaluations once again.

Other important factors for Alpha's success in the workstation market will be user acceptance of DEC OSF/1 Unix and DEC's unfolding strategy with Microsoft Corp.'s Windows NT operating system, industry observers said. An Alpha PC running NT will be introduced next month, but DEC officials said last week they will gauge customer demand for NT before committing to availability dates on the workstation line.

The three new Alpha AXP workstations, all available next month, include the following:

- **DEC 3000 Model 300L:** an entry-level desktop workstation that DEC claims offers twice the performance at 20% less cost than a Sun SPARCstation 10 LX. The 300L has a 100-MHz CPU, costs $4,995 for a diskless version and performs at 44 SPECint92 and 59.3 SPECfp92.
- **DEC 3000 Model 300:** an expandable desktop system with a 150-MHz CPU. It is priced from $7,880 and rated at 64 SPECint92 and 89 SPECfp92.
- **DEC 3000 Model 500X:** the "flagship" deskside system offers what is currently the fastest workstation uniprocessor in the industry, at 109.7 SPECint92 and 163.4 SPECfp92. It has a 200-MHz CPU and is priced from $69,995.

Top of the heap

DEC Alpha workstations vs. leading competitors

	DEC Alpha AXP 300	IBM RS/6000 Model 355	HP 9000 Model 715/50	Sun SPARCstation 10 Model 30
SPECfp92	77	81	72	49
SPECint92	67	40	37	45
Configured price*	$12,995	$15,995	$13,995	$20,495

SPECfp92 characterizes floating-point performance.
SPECint92 characterizes computer intensive integer performance
*19-in. color monitor, 16M or 32M bytes of memory, at least 400M-byte disk

Source: Digital Equipment Corp.

Falling behind

DEC's place in the $9 billion workstation market has been declining since 1991, when its 14% market share put it in third place behind Sun and HP. Then IBM surged to third place in 1992, according to International Data Corp., while DEC fell to fourth place with a 9% market share.

DEC closes in on profitability

Resurgent third quarter offers reason for optimism

By Melinda-Carol Ballou
MAYNARD, MASS

■ Digital Equipment Corp. exceeded expectations and announced significantly smaller losses for the company's fiscal third quarter last week. The results are likely to pave the way toward a profit by July, according to industry analysts.

But, observers said, full and lasting recovery will depend on DEC's ability to increase product sales. While the PC business was strong during the third quarter, VAX sales were flat, and revenue from Alpha AXP will only begin to make significant revenue contributions during 1994, DEC officials said.

Revenue in the period was up 6%, to $3.45 billion, from the comparable quarter last year. DEC reported a net loss of $30 million, compared with a $311 million deficit for the year-ago quarter.

"This is much better than we thought they might do," said Peter Kastner, a vice president at Aberdeen Group, a Boston market research firm.

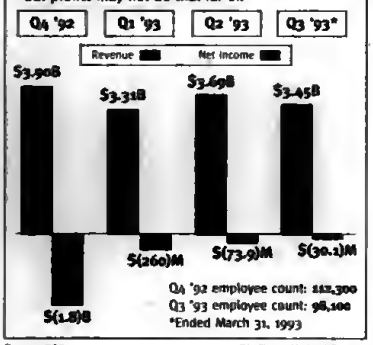
Users "are gradually thinking that DEC is worth looking at again, whereas previously they might have just lived out the life cycle of their purchases and moved on," added Bill Mayhew, chairman of the Digital Equipment Computer Users Society Business Practices Special Interest Group.

DEC cut research and development expenses by 19%, and general and administrative costs declined 8% from the same period last year. Head count fell by 4,000 this quarter.

"I was extremely impressed with their ability to get their operating costs down. When Alpha kicks in later this year, we could see some impressive growth from them," said John Jones, analyst at Salomon Brothers, Inc., an investment firm in San Francisco. Jones raised his estimates from a projected DEC profit of $62.3 million to a "conservative" $99.3 million.

The road back

DEC has strung together eight consecutive losses, but profits may not be that far off



Source: DEC
CW Chart: Michael Siggins

Developing approach

Paving the way for a release of DEC's Alpha AXP-based PC running Windows NT right after Microsoft Corp. ships the operating system, DEC will unfurl an NT developer's early access program for the Alpha-based PC this week.

DEC will ship an Alpha-based developer's platform running a beta-test version of NT. Code-named Jensen, the PC will sell for about $6,995 with 32M bytes of memory, a CD-ROM, a 245M-byte Small Computer Systems Interface drive, support for Compaq Computer Corp.'s Q Vision graphics and a 17-in. color monitor, sources said.

DEC officials refused to confirm these details but said the NT developer's program would debut this week.

"We're very excited about it, and it is much bigger than an attractively priced developer's system, though there will be one very similar to the numbers [that industry sources] rattled off," said Edmund Muth, DEC's worldwide manager of Windows NT application programs.

He said a C compiler for generating optimized Alpha code, debuggers, other tools and Microsoft's Software Developer's Kit will ship with the platform.

Developers can, however, run DOS binaries on Jensen with Insignia Solution, Inc.'s SoftPC emulation product, sources said. And programs written to Win32 application programming interfaces should be easy to optimize for the Alpha-based PC, Muth said.

DEC will also offer "Portathan" centers with access to machines, special services and technical sessions for developers and a toll-free number for information. Also included will be media replication and documentation services for developers seeking to outsource production.

"The pricing is going to be very attractive to developers and is in line with the anticipated ballpark for Pentium systems of $5,000 to $7,000," said Chris Christiansen, a director at International Data Corp.

—Melinda-Carol Ballou

"Why's Apple talking to me about UNIX?"

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Apple

News Shorts

NetWare 4.0 due out today

Novell, Inc. is expected to begin shipping NetWare 4.0 today, almost three weeks after its originally scheduled ship date of March 31. A Novell spokesman said the delay was caused by "minor problems in moving the product from development into the manufacturing process" and not by any problems with NetWare 4.0 itself.

Grid cuts prices, adds models

Grid Systems Corp. cut by almost one-third the price of its Grid Convertible, a combination notebook and pen-based computer announced in the fourth quarter last year. Grid dropped the price from $3,495 to $2,499. The Convertible comes bundled with Slate Corp.'s Pen Essentials as well as Microsoft Corp.'s Windows for Pen Computing. Grid also introduced its 4025 notebook family, which is based on Intel Corp.'s 25-MHz i486SL processor. The base price is $2,099. Grid also jumped into the direct market with Grid Direct.

Lockheed probed in N.Y.

New York Mayor David N. Dinkins has suspended contract negotiations with Lockheed Information Management Services Co. on a proposed $200 million project to provide computer systems to the New York City Parking Violations Bureau pending a city inquiry into possible bribery attempts by Lockheed officials. A spokesman for the New York City Department of Investigation said the agency is looking into allegations that executives at Lockheed IMS, known as Datacom Corp. until 1987, were implicated in a bribery scandal in the mid-1980s.

Lucente joins DEC

Former IBM executive Edward Lucente joined Digital Equipment Corp. as vice president of worldwide sales and marketing. Lucente, who recently left Northern Telecom Ltd., will spearhead a commission-based sales force likely to go into effect this July and the restructuring of DEC's sales and marketing force.

SHORT TAKES Apple Computer, Inc. reported a 15% increase in second-quarter revenue with $2 billion in sales, but profits of $111 million fell short of the $135 million Apple earned in the second quarter of last year.... Aided by a $40 million catch-up tax benefit stemming from its mid-1980s losses, Storage Technology Corp. posted first-quarter profits of $6.4 million on sales of $333.5 million to turn around from a fourth-quarter 1992 loss of $7.7 million.... Local-area network software vendor Artisoft, Inc.'s third-quarter earnings fell from $3.6 million in 1992 to $333,000 for the period ended March 31. Revenue slipped by $1.2 million, to $19.1 million.... Alpha Microsystems, Inc. reported an annual loss of $3.7 million despite a $260,000 fourth-quarter profit.... Advanced Micro Devices, Inc. and Fujitsu Ltd. announced a joint venture under which they will manufacture flash memory.... Unisys Corp. has tapped Kaiser Associates, Inc., Mercer Management Consulting and Monitor Co. to provide benchmark analysis, statistical analysis and business strategy consulting services, respectively, to its clients [CW, March 22].... Conner Peripherals, Inc. agreed to sell its Cipher line of nine-track tape drives and IBM 3480 format cartridge drives to Overland Data, Inc.... Cincinnati Bell Information Systems, Inc. said its federal subsidiary won a five-year, $41 million contract with the U.S. Department of Transportation for support of the Federal Transportation Computer Center in Washington, D.C.

News shorts, *page 16*

Series/1 migration no easy task

By Elisabeth Horwitt

Two years after Series/1s stopped rolling off IBM production lines, about 50,000 are still chugging away at Fortune 500 sites. Many information systems managers, however, are busy figuring out the most painless way to replace them.

IBM's withdrawal of Series/1 support, coupled with the cost/performance benefits of standard microprocessors and operating systems, has accelerated the exodus.

At Alberta Wheat Pool, for example, IBM's discontinued support "was the last straw," said Larry Morrison, network analyst. The Canadian company has since migrated to AT&T 386-based PCs running Unix, which "do everything the Series/1 could do" but whose standard software and hardware components are a lot easier to maintain and support, Morrison said.

However, uprooting the Series/1 is often difficult, users reported.

Since their introduction in 1976, Series/1s have spread their tendrils across retailing, airlines, hotel chains, credit-card companies, financial services, supermarket chains, fast-food companies — any industry that needed an easily configured, inexpensive transaction processor to install at hundreds of sites.

This was because, for its time, the Series/1 was a breakthrough in scalability, configurability and real-time transaction processing. By writing a little code and a feature card or two, the system could become anything from a protocol converter to a point-of-sale (POS) system to a factory-floor communications controller.

"I always referred to the Series/1 as an a la carte computer," said Jeff Schoff, manager of store systems at Giant Food, Inc.

However, the latest 486 and reduced instruction set computing systems couple comparable versatility with "a lot more bang for the buck," Schoff said.

Alberta Wheat Pool "couldn't just migrate code" to its new system and avoided conversion services because "we wanted to keep things in-house," Morrison said. The firm spent about a year rewriting applications to the PC environment, "which was more complex by about a factor of 10," he added.

His only complaint about the new systems was, "PC hardware is not as durable. It is built to last a couple of years, and hard drives need to be replaced fairly regularly."

Visa International, Inc. has also encountered some difficulties during its migration from Series/1 machines to Personal System/2s, according to Barry Pearlman, vice president of VisaNet engineering. In the course of migrating, "words we never used were 'seamless' and 'transparent.'"

The credit-card company expects by year's end to finish its migration off Series/1s, which it uses to connect member banks to Visa's host-based settlement and credit-card authorization services.

The migration process is doubly hard when Series/1s support business-critical applications. JC Penney Co. began two years ago to look at alternatives for some 850 Series/1s that act as protocol converters, POS systems and time and attendance processors at its stores, according to Lee Stockard, senior project manager. The Dallas-based company has set no time frame for reaching a decision.

On the other hand, JC Penney's business services unit has already started putting in IBM PS/2s to replace Series/1s performing the comparatively simple task of giving customers access to the company's credit-card authorization services, Stockard said.

One more option

If code conversion and application rewrites are out of the question, companies have one more option: emulation. Kmart Corp. subsidiary Payless Drug Stores Northwest, with hundreds of thousands of lines of Series/1 code, went with Hummingbird from CIE Communications Enterprises, which enables PCs to emulate Series/1s, systems analyst Gary Smith said.

The advantage of such a system is that Series/1 applications needed no conversion to run on the new PC systems, Smith said, although it did take Payless about 18 months to move all 500 stores over.

The need to continue programming in EDL, the proprietary Series/1 language, does not bother the firm: A recently hired C programmer took about two weeks to pick up enough EDL to do maintenance and some programming, Smith said.

Series/1 facts

First shipped 1976; production ended July 1992.

IBM stopped software support Dec. 31, 1992.

Total shipped: About 100,000 in the U.S.

Currently installed: 46,300 in the U.S.; 90,950 worldwide (including U.S.), according to Infocorp.

Giant operation

For Giant Food, Series/1 migration has been a mammoth task.

The Landover, Md., food and drug chain was using 180-odd Series/1s for everything from processing prescriptions and drug interaction queries at the pharmacies to interfacing with smart scales at delicatessen and meat counters, according to store systems manager Jeff Schoff. "We had almost a million lines of source code and over 1,400 programs developed over 10 years."

Rewriting the applications would have taken too long, and Giant Food could not find packaged software to meet its needs. The nationwide Datatrend, Inc., an Eden Prairie, Minn., Series/1 migration services company, to help convert all of the code to run on an IBM RISC System/6000 AIX machine with an Informix Corp. database.

The conversion process took between 12 and 18 months.

While Schoff would not give cost figures, Datatrend President Mark Walsh said, "100% turnkey conversion of existing Series/1 EDL-based applications to AIX and C" costs between $500 to $5,000 per CPU, depending on the size of the application and the complexity of the code.

Giant Food, which is now in the process of switching users over to the new systems, expects its investment to start paying off rapidly in terms of better performance, lower maintenance costs and the ability to buy off-the-shelf software, Schoff said.

Early conversion sites have been a "resounding success," primarily because of the RS/6000's quicker response time, Schoff said. "The Series/1s were never fast enough for our pharmacies." — *Elisabeth Horwitt*

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NetWare addressing unified

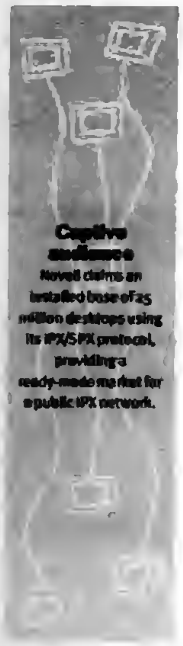
Network Registry first step to building public IPX net

By Michele Dostert
PSOVO, UTAH

■ Novell, Inc. wants to unite users of its NetWare local-area network operating system in one networked "community." To that end, it unveiled last week an address and naming service that will form the basis for an "Internet" of NetWare users in the future, the company said.

Novell's first goal with Novell Network Registry is to help network administrators eliminate address conflicts on corporate internetworks, said Navindra Jain, vice president of Novell's internetworking products division. "Many geographically dispersed LANs have adopted their own address scheme. When these LANs are connected to a corporate network, address conflicts are common."

In the long term, Jain said, NetWare IPX users will be able to use their unique network addresses to access a planned IPX-based public network, similar to the Internet currently accessed by Transmission Control Protocol/Internet Protocol (TCP/IP) users. "We are planting some seeds, of which this is one," Jain said. "We are also working with private carriers, and you'll see some announcements coming on this in the next year."



Captive audience
Novell claims an installed base of 25 million desktops using its IPX/SPX protocol, providing a ready-made market for a public IPX network.

Novell envisions a host of possible uses for a public IPX network, including messaging, electronic data interchange and remote network management.

Varied interest

Users held differing views on a public IPX network.

"I would love to be able to use NetWare to reach suppliers, other hospitals, insurance companies and the like," said Wayne Robertson, network administrator at St. Agnes Medical Center in Fresno, Calif. "Access to a public IPX network would be a real value-add to NetWare."

But some NetWare users who have selected TCP/IP as their protocol of choice and who intend to run NetWare over TCP/IP as soon as Novell fully supports it as a native protocol were uninterested.

"We're moving all of our wide-area traffic to TCP/IP and will only use IPX/SPX locally," said Joseph Kalus, a communications consultant at John Hancock Mutual Life Insurance Co. in Boston. "So an IPX public network doesn't hold much appeal for us."

Sensitive to such concerns, Novell has been stressing compatibility with TCP/IP when discussing its IPX plans. According to Jain, the Novell Network Registry will offer a utility for translating TCP/IP addresses into IPX/SPX addresses; he said he also expects that a gateway to the TCP/IP Internet would be an integral part of any IPX public network.

Look up the number

Novell Network Registry can provide the following:

- Unique IPX addresses.
- Unique organization name for use with NetWare 4.0 Directory Services.
- Algorithm to generate unique IPX addresses from IP addresses.

In the meantime, NetWare users can contact the Novell Network Registry to reserve a range of network addresses or an organization name or both. Users will receive a unique range that fits their need for network addresses of machines using Novell's IPX/SPX networking protocol. Network managers can then subdivide the range and assign individual numbers to servers, routers and network segments.

Lorie Mouklas, a project leader at Hoechst Celanese Corp. in Bridgewater, N.J., said the address service will be valuable for those organizations that have not already worked out their own internal addressing scheme.

"We already have our own system for allocating addresses, so we'll have to see if our addresses can be easily mapped over to a Novell-supplied range before we ask for one," he said.

By also choosing and reserving a single top-level organization name for use with NetWare 4.0's directory service, customers can ease the administrative work load for network managers while laying the groundwork for a messaging connection to an eventual IPX-based public network, Jain said.

The Novell Network Registry is available now starting at $100, depending on the range of addresses desired.

Users align on licensing

CONTINUED FROM COVER 1

chairman of the task force that has spent the past year forging the position paper.

Both the manifesto and its authors steered clear of singling out specific vendors for criticism or lambasting the vendor community. "In many cases, they're having as hard a time as [the users] are" dealing with the new paradigms, Zeitz noted.

"For instance, most vendors seem willing to offer concurrent user licenses or, at the very least, user-based agreements, but they're concerned about their inability to monitor them," he added. "One vendor said, 'We'd be glad to consider concurrent use, but we can't figure out what it is.'" Zeitz concluded: "There are technical issues that need to be resolved."

One vendor, Computer Associates International, Inc., was supportive of SIM's stance. "We support any initiative that makes it easier for clients to license software," noted Arnold S. Mazur, CA's executive vice president.

> CA has during the last year replaced strict tiered pricing with many flexible licensing plans including enterprisewide approaches

Many choices

During the last year, CA has replaced strict tiered pricing with a number of flexible licensing plans, including enterprisewide and usage-based approaches. "We have more license plans than Carter has pills," Mazur noted.

Nevertheless, many users can easily reel off examples of the practices they hope the SIM manifesto will help defeat.

"We always get hung up on issues of globalism," said Pepsico, Inc. Chief Information Officer Allan Deering. In licensing software for a huge, multinational and highly decentralized company, he noted, pricing across national boundaries "is always an issue — and support is, obviously. Maybe [the vendor] has a help desk, but do they speak Egyptian?"

Harvey Shrednick, Corning, Inc.'s senior vice president of information services, recalled his firm's dismay at discovering that moving an application from an IBM Application System/400 B to an AS/400 D would trigger a $396,000 relicensing fee. In the final analysis, Shrednick said, he leveraged his long-standing relationship with one of the vendor's top executives to knock the bill down to "what amounted to a nuisance fee. But I shouldn't have had to do that." And, Shrednick noted, not every user has that option.

Shrednick said last week's paper will not calm the troubled licensing waters overnight, "but I think it's a valuable start." SIM, he said, "feels strongly about this. That's why we're playing it into the marketplace."

Next on the agenda, Zeitz said, is disseminating the paper in the vendor community, a step that SIM hopes will lead to a vendor/user focus group sometime this summer. Several SIM members, however, cautioned against expecting a clash that has festered for the past several years to clear up in the next several months.

"Third-party vendors may be a little reluctant to get involved," Harkness noted. "They could be giving up large margins. The question is, what's in it for them?"

Senior editor Rosemary Cafasso contributed to this report.

While some software suppliers have made strides toward more flexible licensing, many users still claim vendors' pricing and licensing practices have failed to keep up with these trends: the fast pace of technology, the surge toward multivendor platforms, the rush to desktop computing, enterprisewide corporate interaction, globalization and rightsizing.

Such a deal

Brigham Young University has worked out a precedent-setting software licensing pact with CA. The school is free to use all licensed CA software under any operating system for 500 concurrent users.

CA plans to offer this option to other users, according to Arnold S. Mazur, executive vice president at CA.

The contract allows the school to use CA-Unicenter, CA-Datacom and other CA products on any multivendor, distributed server platforms that the school chooses, said Doug Walker, a senior programmer/analyst at Brigham Young. That will come in handy next month, when the university begins to integrate CA-Unicenter for Unix with its Hewlett-Packard Co. HP/UX financial services environment.

The major benefit, Walker said, "is that we don't have to go back and relicense Unicenter or other products for different servers."

The deal also provides the school with the flexibility to swap servers in and out of its enterprise. Plus, the contract is fixed for 500 users, so Brigham Young does not have to license platform-specific software for a certain number of users.

Walker said the school is still in the early stages of downsizing from its IBM MVS environment, and while it may decide on HP/UX, IBM's OS/2, Novell, Inc.'s NetWare and Data General Corp.'s DG-UX Unix architecture are also being considered.

"Fortunately, the new licensing agreement doesn't restrict our ability to choose" hardware platforms, Walker noted.

Walker would not disclose the financial details of the licensing agreement, although he said CA "gave us a competitive price." There is no specific length of time to the license, "as long as we pay the maintenance," Walker added. — *Thomas Hoffman*

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Client/server

PowerBuilder to expand features

By Kim S. Nash
SAN DIEGO

Powersoft Corp.'s enhancements to its PowerBuilder client/server application generator, due to be announced today at the company's user group conference, were designed to appease user demand for better front-end query and development features.

PowerBuilder 3.0, now in beta testing, sports two new reporting modules, analysts said.

A formal announcement that Powersoft in Burlington, Mass., is working on a link to Intersolv, Inc.'s PVCS version control software is also expected this week [CW, April 12]. Powersoft officials declined to comment on the impending announcements.

The improvements will help cover PowerBuilder's "obvious deficiencies," said Judith Hurwitz, president of The Hurwitz Consulting Group in Newton, Mass.

Moreover, by expanding project management and organization functions, Powersoft is gunning for corporate users seeking tools for major client/server migration efforts. But more work must be done before PowerBuilder will be a fixture at enterprise-level planning sessions, Hurwitz said.

Links to other vendors' front-end analysis and design modules are not enough, Hurwitz said. Powersoft and client/server brethren such as Gupta Corp. have suffered from a "big weakness," she explained. "They don't allow you to do development at the enterprise level."

Like Powersoft, Gupta is taking steps to resolve this shortcoming, analysts said [CW, Jan. 18].

Peggy Ledvina, an analyst at Meta Group, Inc. in Westport, Conn., agreed with Hurwitz's assessment. For example, adding a significant number of users to enterprise applications can cause heavy transaction processing slowdowns, Ledvina said.

Those kinds of obstacles have kept many PowerBuilder projects in pilot stages at Fortune 500 companies such as Merrill Lynch & Co. and Chevron Corp., Hurwitz noted.

Among the new pieces to PowerBuilder 3.0 are PowerMaker, a database query and reporting tool for developers, and PowerViewer, a similar tool aimed at end users.

Separately, Powersoft is expected to unveil a scaled-down version of PowerBuilder aimed at end users. This version will consist of graphical user interface tools bundled with relational database products from Watcom International Corp. This slimmed PowerBuilder/Watcom combination is poised to do battle with PC database and development frameworks, such as Microsoft Corp.'s 5-month-old Access.

The Intersolv deal addresses PowerBuilder's lack of change management and version control features. Gupta, too, is expected to partner with front-end tools makers, a spokesman said.

Powersoft's Watcom agreement may provide a needed PowerBuilder repository in the future, analysts said, but for now it appears to be a deal targeted at low-end development.

At a glance

- Powersoft's impending deal with Intersolv is the most recent in a string of technology agreements with front-end computer-aided software engineering vendors, including LBMS, Inc. and Bachman Information Systems, Inc.
- Attendance at this year's PowerBuilder user conference is expected to triple 1992's total of about 400, a Powersoft spokeswoman said.
- PowerBuilder users numbered 2,000 at the end of 1992.

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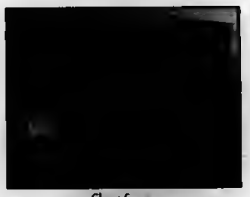

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Internetworking protocols

IBM to open APPN to third parties

By Elisabeth Horwitt
CHAPEL HILL, N.C.

■ At the first meeting of the APPN Implementors Workshop last week, IBM may have convinced even the most skeptical vendors of its intentions to open up Advanced Peer-to-Peer Networking (APPN), its strategic internetworking protocol.

IBM presented 37 vendors with the complete APPN Network Node document. That should give vendors enough to develop against, said Lynn Nye, Syne Research, Inc.'s director of IBM programs.

IBM also said it would make specifications for key upcoming APPN features available to vendors early so that they could provide input into the specifications and get a jump-start on incorporating them into products.

"The more information they give to vendors and customers; the better," said Ken Smith, a manager of systems software at Canada Mortgage and Housing Corp. and an early APPN user who attended the meeting.

In particular, the Ottawa firm would like to see implementation of full APPN capabilities on the Cisco Systems, inc. routers it is now implementing, Smith said. Cisco has announced plans to support APPN Network Node by the second half of 1994.

Also at the meeting, IBM and 11 other leading router companies formed a working group to develop a standardized way for Transmission Control Protocol/Internet Protocol (TCP/IP) internetworks to route IBM Systems Network Architecture (SNA) traffic, as well as other link-level protocols such as NetBIOS and source-route bridging [CW, April 12]. The basis of the protocol will be IBM's Data Link Switching.

The group will operate within the APPN Implementors Workshop, rather than within the Internet Engineering Task Force, as originally proposed by Cisco.

Promises, promises

Among the APPN specifications that IBM promised to release to workshop vendors are the following:

- **The Dependent LU Requestor**, which would allow traditional SNA printers and 3270 terminals to communicate over a multihop APPN network, instead of just over direct links to an IBM mainframe. IBM said workshop members will get the specifications by the next Implementors Workshop meeting in June. IBM said it plans to ship VTAM Version 4 Release 2, with Dependent LU Requestor, in 1994.
- **The next version of APPN**, with High Performance Routing. APPN Version 2 will run three to seven times faster than the current protocol and also gain the ability to route sessions dynamically, said Jane Muns, IBM manager of networking architectures at IBM.

High Performance Routing should be a big help to APPN "in the fight [against TCP/IP] for the hearts and minds of the user community" because TCP/IP has dynamic routing, said David Passmore, a vice president at Gartner Group, Inc.

IBM will make a draft specification available to workshop vendors in the third quarter, Muns said. Commercial release of APPN Network Node Release 2 is due out in the IBM 6611 router early next year.

- **Management of APPN networks.** IBM demonstrated a prototype of a management system based on Common Management Information Protocol, which graphically depicted APPN network topology and collected accounting information. IBM plans to release a commercial version within a year, Muns added.

Patent problem

The only sour note at the APPN Implementors Workshop was IBM's announcement that the intellectual property rights pertaining to APPN Network Node also apply to APPN End Node and Low Entry Networking (LEN).

The announcement shook up vendors that recently begin working on PU2.1 products "on the understanding that IBM put it in the public domain last August," said Proteon, Inc. spokesman Bill Donovan. The Advanced Peer to Peer Internetworking Forum, for example, formulated APPI around LEN on the assumption that no IBM patents were involved, he added.

However an IBM spokeswoman said it was up to vendors to find out what patents applied to the protocols.

IBM recently announced that a $25,000 yearly fee gives vendors the right to develop and market APPN Network Node products. However, IBM is working on a strategy that will probably involve charging a small separate fee, or no fee, for the rights to End Node and LEN, the IBM spokeswoman said. IBM said it will announce its plans at the next workshop in June.

End Node and T2.1 protocols define how a device can communicate over an APPN network.

—*Elisabeth Horwitt*

Motorola extends paging

CONTINUED FROM COVER 1

pager while the caller stays on the line.

Tampa Electric's interest is twofold, according to Mustafa: "We want to combat the perception of people hiding behind voice mail, which gives a bad signal about customer service. Also, in a typical voice-mail environment, you'd usually need a live-body bailout [to answer the phone] to the tune of $20,000 to $30,000 a year," Mustafa said.

Communication concerns

Others expressed concern about the political impact that user-designed "priority lists" for screening calls and messages might have on their business environment, as well as the effect of frequent disruptions while conversing in a peer's office or attending a meeting.

"It sounds nice, but I don't know if our company is ready for this culturally," said an information systems analyst at a large Midwestern utility who asked not to be identified. "For example, some people use voice mail to screen their calls and take control of their workday. Also, we don't run fax boards in our PCs; workgroups share fax machines. So that kind of communication wouldn't work."

However, "in today's world, there are things that must get done quickly in order to win business," noted Andy Seybold, publisher of the "Outlook on Computing" newsletter and an analyst following the wireless market. "So there is an absolute need for accessibility."

On the other hand, "the shorter electronic leash" companies are binding their employees to "could wind up being counterproductive because if you're on your way to get something done, you're interrupted," Seybold said.

The Site Connect system, pieces of which are slated to ship in the third quarter, would capture filtered telephone, E-mail, PC-based fax, calendaring and other traffic on a dedicated PC running The Santa Cruz Operation's Unix operating system and one or more Site Connect software packages.

The PC in turn ships data or voice caller information to a wandering user's alphanumeric pager. A key goal of the system is to eliminate frustrating and expensive phone tag, said Steve Spiro, director of Motorola's Customer Owned Paging operations group here.

Other options

There may be other ways to achieve similar functionality, users said.

For example, while the Boca Community Hospital in Boca Raton, Fla., already uses a Motorola paging system, it is looking at getting Site Call-esque functionality through auto-attendant software from another vendor for its telephone switch, said Launa Pahula, telecommunications manager.

One reason is that when the hospital bought into the Motorola PageBridge II-based paging system two years ago, Motorola indicated that the system could already do the things Site Connect is promising, said Marvin Newman, a network technician.

The hospital "has long had big dreams about sending all kinds of traffic and data to individuals carrying pagers all over the hospital," he said.

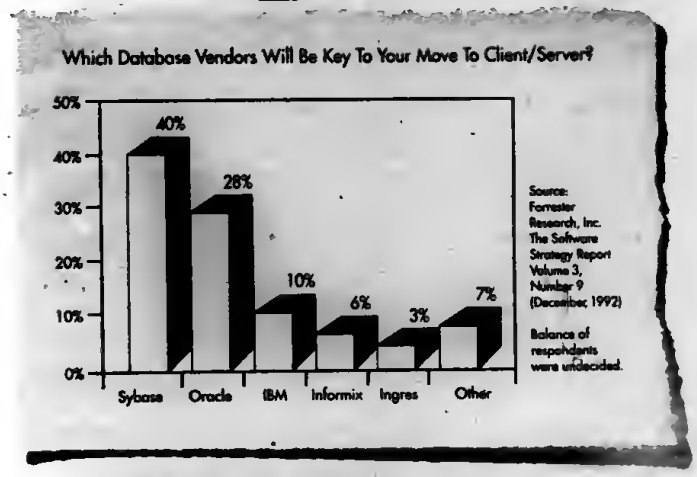
Just the facts

Site call
What: Module that allows telephone system to send in-building users with pagers the phone number and/or name of a waiting caller.
How: Users install Motorola software on SCO Unix system that connects to phone switch.
When: Due to ship in the third quarter for several manufacturers' phone switches. Centrex-based system scheduled to roll out in the fourth quarter.
How much: About $500 per user for a 500-user system. Includes a dedicated PC with Unix and Site Call software, a $20,000, 2,500-user capacity, an on-site paging system and a $125 to $300 alpha pager for each user.

Site Message
What: Module that allows downloading of critical E-mail, calendaring, PC-based fax and other data.
How: Same basic setup as Site Call but with application-specific Site Message software and specialized application programming interface (API) added to a dedicated PC.
When: Initial Microsoft Corp. Windows- and Windows NT-based applications to ship within three months; Motorola's goal is to roll out a suite of 50 to 100 applications within the next year.
How much: Cost of applications ranges from $29 to $250 each. The API, which gets applications to speak paging protocols, costs from $90 to $149 per PC or $495 for a server version.

Site Alert
What: Notifies security, troubleshooting, engineering and other personnel if there is a security breach.
How: Site Alert installs on a dedicated PC alongside other modules or by itself.
When: Available now.
How much: $7,500 for application software for 5,000-user system.

The analysts have graphed the future of Client/Server computing.



And they have also spoken.

In recent issues of their ongoing reports, four of the most respected computer industry analysts have taken an unbiased look at Sybase, and its vision of enterprise-wide client/server computing.

They were impressed.

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WordPerfect, Microsoft set for E-mail forms war

By Michael Vizard
SEATTLE

WordPerfect Corp. and Microsoft Corp. are racing to deliver products that allow small workgroups to easily create forms that can be attached to electronic mail. Both companies are scheduled to deliver products in this arena in the next two months.

This week, Microsoft is expected to introduce forms software for Windows that will allow users to easily attach forms to Mail beginning in June. This offering will go head to head with WordPerfect's InForms for Windows software, which unlike the Microsoft package will support a wide variety of mail protocols. The WordPerfect package, announced late last year, is also due in June.

Electronic forms are not new; they have been available for some time in offerings such as Digital Equipment Corp.'s All-In-1 system, Lotus Development Corp.'s Notes environment and Oracle Corp.'s SQLForms.

Unlike these products, however, the Microsoft and WordPerfect packages were designed to make it easy to inexpensively create forms for Windows users that can then be transported across mail transport protocols. This differs from the Oracle and Lotus approach, which requires a database for transport, or DEC's approach with All-In-1, which requires programmers to create forms.

"We basically went with the WordPerfect InForms package to get rid of as much paper as possible," said Arnold Dixon, a senior systems analyst at Hoechst Celanese Corp. in Charlotte, N.C., who is beta-testing the WordPerfect offering.

Dixon said the WordPerfect strategy is attractive because it supports WordPerfect's Office, Lotus' CC:Mail and Microsoft's Mail while providing hooks to 17 databases to store historical data.

"The typical Microsoft pattern is to build for their own applications first and ultimately support other environments. Rivals tend to pound Microsoft about being open, but Microsoft counters that [they] have the volume," noted Brent Williams, an industry analyst at International Data Corp. in Mountain View, Calif.

Flexibility issues

Dixon added that Hoechst Celanese also went with WordPerfect because InForms will be available on DOS, OS/2 and Unix.

InForms is available in two components: a $199 filler package that displays the form on each client system and a $1,495 designer package that is needed to actually create the forms.

Microsoft declined to comment on its forms product, code-named Calvin, pending the product's launch at the Microsoft Mail Developer's Conference this week.

Users make move to Oracle 7

By Jean S. Bozman
REDWOOD CITY, CALIF

■ Users are migrating to the new version of Oracle Corp.'s database management system in stages. They report an immediate performance boost after a weekend conversion but have continued to activate new Oracle 7 features for weeks afterward.

The migration from Oracle 6.0 has been much easier than expected, some users said, requiring only a fraction of the effort of moving from Oracle 5.0 to Oracle 6.0, which shipped in 1989.

Industry analysts said they believe the move to Oracle 7, which shipped in January, will proceed gradually.

"I don't think this is a snap-your-fingers migration," said John Morrell, research manager for Unix software at International Data Corp. in Framingham, Mass. "People will take the database engine first and then the application logic, and then they'll start to build in distributed [database] features. You just can't do it from scratch."

Complex systems that fully exploit Oracle 7's distributed database features could take months or years to build, he said.

Users who have moved to Oracle 7 report an initial performance boost of about 10%.

"At the engine level, I would say that Oracle 7 is only about 8% to 10% faster in our environment," said Michael Higgins, technical support manager at Byer California, a San Francisco firm that manufactures women's clothing. "But when you apply the Version 7 features, it can be as much as 35% faster."

Among those features, Higgins said, are speedy execution of business rules stored in the server and "packages" that group related database queries together.

Last month, Byer put a mirrored 5G-byte Oracle 7 database into production on two Sequent Computer Systems, Inc. Symmetry 2000/750 machines. Performance has been reliable so far, he said.

Step by step

The first step in converting to Oracle 7 is to start modifying Oracle 6.0 applications by using the character-based SQLForms 3.0 application development tool. Business "rules" that used to be stored in Oracle 6.0 applications can be moved to the Oracle 7 server for speedier execution and consistent enforcement.

The conversion can be done in a weekend, some users reported. By running in a Version 6.0 emulation mode, users will be able to control how many Oracle 7 features are activated.

"You end up with a Version 7 database running with Version 6.0 rules," said Jim Raper, a database administrator at BASF Corp. in Anderson, S.C.

More effort required

The conversion from Oracle 5.0 to Oracle 6.0 took more effort, users said, because data had to be exported from the old database and imported into the new one.

Users will have to pretest Oracle 7 functionality for each converted application.

"The rules you have written don't get turned on automatically," said Raper, who is preparing Version 6.0 applications for migration to Oracle 7 in 1994. "You turn them on rule by rule."

Still missing from the Oracle 7 environment is SQLForms 4.0, a new tool that supports graphical user interfaces such as Microsoft Corp.'s Windows for client/server applications.

Even after SQLForms 4.0 ships this summer, some sites will be waiting for a graphical version of Oracle's computer-aided software engineering tools, which analysts said they expect to ship by 1994.

oracle

Many users will continue using Oracle 6.0 this year, waiting for others to put Oracle 7 through its paces in production applications. "I still have the sense that there's a fair amount of business being done under Version 6.0," said Charles Phillips, a vice president at Kidder, Peabody & Co. in New York.

Electronic documents

Adobe to offer SGML translation tool

By Michael Vizard
BOSTON

In what amounts to a truce of sorts in the battle over electronic document formats, Adobe Systems, Inc. last week said it will provide a conversion software package that will translate Adobe file formats into the Standard Generalized Markup Language (SGML) format.

Desktop-driven

Windows and the Macintosh are fueling growth in desktop publishing

1992 desktop publishing sales

[redacted]	$75.8M
[redacted]	$53.8M
[redacted]	$10.1M

Source: Software Publishers Association

Thus far, SGML, an International Standards Organization standard that defines a format for exchanging documents across diverse publishing systems, has garnered support from high-end document publishing suppliers such as Interleaf, Inc. in Waltham, Mass., Frame Technology Corp. in San Jose, Calif., and Xyvision, Inc. in Wakefield, Mass.

But developers of PC application software have provided only lukewarm support at best.

Last week's announcement, made at the Seybold Seminar here, calls for Mountain View, Calif.-based Adobe to team up with Avalanche Development Co. in Boulder, Colo.

Avalanche will provide software to convert documents created using Adobe's Portable Document Format (PDF) into an SGML-compliant format. But Adobe's primary solution for document interchange will remain PDF, which is the cornerstone of Adobe's forthcoming Acrobat products.

Scheduled to ship this June, Acrobat is a series of products that allow documents created with Adobe fonts to be converted into a common file format. This format can be accessed by any software that supports Adobe fonts.

The SGML conversion software from Avalanche is not due until the first half of 1994.

While Adobe is taking a somewhat conciliatory attitude toward SGML, other suppliers of PC application software said they see no need to make SGML a major focus of their product efforts.

[redacted]

More than 30 vendors belong to GML Open, a consortium designed to promote SGML interoperability. The Boulder, Colo., group plans to promote a tighter SGML specification later this year to boost document interchange.

"We have no SGML product under way at Quark," said Tim Gill, senior vice president at Quark, Inc., in Denver. He added that most sites will limit the number of publishing packages they support to minimize the complexity of file format translation.

Plan of action

Executives from Aldus Corp., Microsoft Corp. and WordPerfect Corp. said their strategies will be to provide filters rather than editors that work directly against an SGML format.

"SGML is a top-down sell. You tend to see it in government sites or corporate sites where it is mandated by decree," said Mike Cockrill, desktop applications program manager at Microsoft.

Although PC application vendors are slow to support SGML, a number of user and industry organizations now specify SGML as a standard, including the Air Transport Association, the Society of Automotive Engineers, the U.S. Department of Defense and the CAD Framework Initiative.

Internetworking

Cisco, SynOptics kill integration plan

By Joanie M. Wexler
REDWOOD CITY, CALIF

A decision made public last week by Cisco Systems, Inc. and SynOptics Communications, Inc. to scrap plans to physically integrate their high-end routers and wiring hubs into one superbox can be partly chalked up to ever-spiraling advances in networking technology and fickle user attitudes.

The two industry bigwigs announced their intentions for what they dubbed the RubSystem 18 months ago. At that time, according to a Cisco spokesman, high-speed networks such as Asynchronous Transfer Mode and emerging 100M bit/sec. Ethernet were not factors.

"Though our customers are still entranced by the integration concept, the real trade-off would be freezing new technology for the sake of the integration," he said.

SynOptics revealed that it has a new hub under development aimed at network control center applications. The hub, to be introduced this year, will include internetworking technology and ATM network support.

Some of the original intentions of the RubSystem were to save space and cost per rack unit, explained Kevin Woods, hub product marketing manager at SynOptics. "But we learned during development over the past few months that we weren't going to achieve the cost benefit, and there was so much technology involved, users would likely have to buy two chassis anyway," he said.

Meanwhile, at least some customers' thinking has changed as well. "At first, [the RubSystem] didn't sound like a bad idea," said Victor Bojorquez, senior network engineer at Advanced Micro Devices, Inc. in Sunnyvale, Calif., a Cisco and SynOptics shop. "But as time went on, we decided the concept was counter-intuitive to a distributed computing environment because there is too large a central failure point."

Enthusiasm for the RubSystem may also have waned as users became intrigued by the concept of the collapsed backbone — a network configuration idea kicked off largely by router vendor Wellfleet Communications, Inc.

In a collapsed backbone scheme, a large, high-end router might sit in the basement of a building and interconnect local-area network segments on multiple floors that are linked by fiber cabling running through an elevator shaft. In fact, John Hart, 3Com Corp.'s vice president and chief technical officer, said that as a maker of both hub and router products, the company looked into a similar type of integration around the time of the RubSystem announcement. But 3Com was discouraged in its efforts by user interest in collapsed backbones.

"Our users said it was cheaper to buy more ports on one big router than many smaller boxes or router cards distributed throughout the organization," Hart said.

Cisco and SynOptics, which claim a large, overlapping customer base, intend to continue their endeavors to tightly couple network management of their devices. But Bojorquez said that in his case, "just being SNMP-manageable, which the devices are today, is probably enough. But I haven't yet really seen what they are offering."

Another key goal of the Cisco/SynOptics joint effort — on-the-fly router port connections — will still be part of the two companies' endeavors, Woods said. A special hub module that interfaces to an external Cisco router will allow LANs needing to communicate at a given moment to do so dynamically, he explained, rather than having predetermined, fixed connections.

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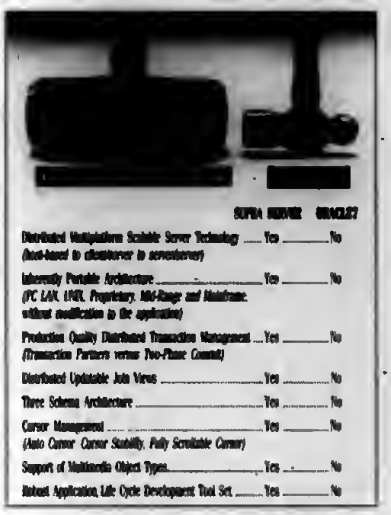

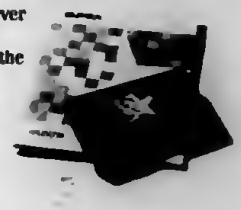

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News Shorts

Author joins CA ranks

Hesh Kestin, author of last year's *21st Century Management: The Revolutionary Strategies that Have Made Computer Associates a Multibillion-Dollar Software Giant*, is now a salaried employee at Computer Associates International, Inc. Kestin said he was not a paid consultant or employee of CA's at the time the book was written. However, he admitted he negotiated with CA over editing. "They had blue-pencil rights on technical information and personal information on Charles [Wang, CA's chairman]," he said. Kestin, whose job description includes helping to write some of Wang's speeches, said he's working on an unspecified "business/software project."

Nynex unveils flexible local service

New York Telephone has introduced Nynex Enterprise Services, which are said to provide corporate users with more flexible bandwidth allocation on fiber-based metropolitan-area networks. Enterprise Services will support bandwidth of 64K bit/sec., fractional T1 speeds of up to 768K bit/sec. and T1 speeds. The company will offer 45M bit/sec. and 100M bit/sec. Fiber Distributed Data Interface services within local access and transport areas and standard features such as no-charge installation and service restoration within four hours.

IBM chases Apollo users

IBM is joining the pack racing after Hewlett-Packard Co.'s Domain user base from the former Apollo Computer, Inc., which HP acquired in 1989. Together with Atlanta-based Enabling Technologies Group, IBM last week announced a collection of specialized software migration tools and services to help Apollo/Domain users migrate to IBM's Unix-based RISC System/6000 line.

New QuarkXPress on display

Quark, Inc. in Boulder, Colo., previewed the next release of QuarkXPress for Windows at the Seybold Seminar last week. Version 3.2 for Windows, which adds 20 features and runs substantially faster than the previous release, will give Microsoft Corp. Windows version users of the electronic publishing package the same capabilities as the Apple Computer, Inc. Macintosh version. Both the Macintosh and Windows updates are slated to ship this quarter.

Feds release new encryption method

The Clinton administration last week announced a new encryption technology developed by the National Institute of Standards and Technology and the National Security Agency for secure transmission of voice and data communications. A microcircuit called a Clipper Chip employs a unique encryption key split into two parts and stored in two separate "key-escrow" databases, one maintained by a federal agency.

SHORT TAKES Walker Interactive Systems, Inc. rolled out Windows and OS/2 versions of its financial applications to compete with products from PeopleSoft, Inc. and Dun & Bradstreet Software.... Sterling Software, Inc. in Rancho Cordova, Calif., has announced Hypertraks, a suite of automated data-transfer management products aimed at electronic data interchange and other applications that involve multiple sites and companies.... Micro Focus and Apple have agreed to port the Micro Focus Cobol compiler, Micro Focus Toolbox and Micro Focus Dialog System to Apple's A/UX operating system.... The ASK Group, Inc.'s Ingres Products Division announced a secure database management system, the Ingres/Enhanced Security database.

Compaq, Microsoft aim high

Seek standards in plug-and-play PCs and portable computing

By Michael Fitzgerald
WASHINGTON, D.C.

Microsoft Corp. and Compaq Computer Corp. last week formalized a long-standing working relationship.

The partnership has lofty aims — specifically, to foster new standards in the PC world, such as "plug-and-play" PCs, pen computers and handheld devices, and Microsoft Corp.'s Windows NT [CW, April 12]. Still, as Kimball Brown, analyst at Computer Intelligence/Infocorp in Santa Clara, Calif., said, "there wasn't much there."

Brown did say that if Microsoft were to build a single driver in Windows for something like the Small Computer Systems Interface (SCSI), which was made available to all hardware and software vendors, it could drive a new market for SCSI and flailing oem technologies such as infrared communications or Personal Computer Memory Card International Association cards.

> Compaq and Microsoft began their allegiance in 1987, when Compaq was the first PC vendor to build an 80386 based PC and Microsoft developed Windows 386

Analysts gave the standards effort a shot at success, although it snubs the IBM PC Co.

"IBM is increasingly irrelevant in terms of defining things these days," said Jeffrey Henning, analyst at BIS Strategic Decisions in Norwell, Mass.

Eckhard Pfeiffer, Compaq's president and chief executive officer, and Microsoft Chairman Bill Gates said their partnership would bear fruit within six months. They said the products they developed would be made available to other PC makers.

"Our intent is not to throw rocks in each other's way [but] to support an open industry standard," Pfeiffer said.

Some questioned why Microsoft would set one hardware vendor above others.

"This is a bonehead move on Microsoft's part," said John Dunkle, president of WorkGroup Technologies, Inc. in Hampton, N.H. "Why pick a vendor when you're trying to be hardware-independent?"

PC factions rearming

CONTINUED FROM COVER 1

begins, however, it could bog down the move to open systems. Roger Bender, manager of operations at Deloitte & Touche's New York office and a past president of the Microcomputer Managers Association, warned against the repercussions of such divisiveness. "The marketplace won't accept half a solution," he said. Bender added that he expects vendors to protect his current investment.

Microsoft and Compaq officials carefully ducked the issue of whether they were drawing lines in the sand with Apple and IBM.

"You might see a battle initially," said Compaq Senior Vice President Ross A. Cooley. He said he expects few vendors to adopt an either/or approach. "Within six to 18 months, though, you'll more than likely see a lot of manufacturers behind both," Cooley said.

Mum on war

Microsoft Chairman Bill Gates and Compaq President Eckhard Pfeiffer stopped short of saying the two companies planned war with IBM and Apple.

The pact represents Microsoft's most extensive agreement with a PC hardware maker in five years and comes after its long-term partnership with IBM dissolved caustically last year. Microsoft has also worked closely with Digital Equipment Corp. to ensure that Windows NT runs on DEC's Alpha chip.

The Microsoft/Compaq agreement arrives just as the IBM/Apple/Motorola triumvirate begins to show results. A PC using the trio's PowerPC microprocessor is expected to be demonstrated at next month's Comdex/Spring '93, while IBM is expected to begin shipping PowerPC-fueled machines by year's end. Apple and IBM are also developing an object-oriented environment called Taligent and a new Unix operating system called PowerOpen that will be able to run Macintosh software on either Apple or IBM computers.

Seamless envy

Analysts said Microsoft is feeling the heat from these moves and is particularly envious of the alliance's ability to integrate hardware and software seamlessly.

"Microsoft can work all they want on software, but unless they are assured that certain hardware standards will be met, Windows will continue to have that jury-rigged feel," said Pieter Hartsook, editor of "The Hartsook Letter," a newsletter in Alameda, Calif.

If a pitched "battle of the bands" shapes up, it is anyone's guess who will win. Some analysts do not believe Microsoft and Compaq can keep PowerPC from building momentum.

Battling PowerPC "is a very strong part of this announcement, but Microsoft and Compaq pale in comparison to PowerOpen," said John Dunkle, president of market research firm WorkGroup Technologies, Inc. in Hampton, N.H.

Others gave Microsoft and Compaq a fighting chance, depending on how the partnership develops. "If Compaq really pushes this, they're absolutely powerful enough to bring the rest of the [PC clone] horde along, but it probably won't work real well unless IBM jumps in," said Kimball Brown, analyst at Computer Intelligence/Infocorp, a Santa Clara, Calif., market researcher.

Partner in PR

Dell Computer Corp.'s G. Glenn Henry, senior vice president of the product group, said Dell views the partnership as a public relations move and that Dell is working with Microsoft on many of the same goals already.

Analysts said it was probably unrealistic to expect a vendor love fest on the road to open systems. "You are seeing the end of the AT bus architecture and vendors splitting into two camps behind the CPU and microkernel architectures of the future, and the industry is only going to be as open as the alternative you choose," Dunkle said.

If vendors have listened to users, the battle may simply turn into a question of which operating system and hardware platform will supplant the Intel Corp.-based hardware/Microsoft-based software oligopoly of the 1980s. Intel and Microsoft may well continue their market dominance.

Analysts said Microsoft may hedge its bets by putting Windows NT on the PowerPC architecture, while the various hardware clone makers will look closely at reduced instruction set computing architectures, such as PowerPC, in case Intel's Pentium chip falters.

West Coast correspondent Christopher Lindquist contributed to this report.

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Microsoft*	*802.3
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Windows for	*802.3
Workgroups	Token Ring (4/16 Mbps)
Windows NT	*802.3
	Token Ring (4/16 Mbps)
IBM LAN Server	*802.3
	Token Ring (4/16 Mbps)
AppleTalk	*LocalTalk
	*EtherTalk
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SunOS**	*Ethernet
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SCO UNIX*	*Ethernet

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What's more, HP's LaserJet 4Si MX printer is ready to handle whatever needs come down the

that adapts to multiple environments.

pike. More operating systems? No problem. As your network system continues to evolve, the capabilities of this printer are no longer just impressive. They're indispensable.

The HP LaserJet 4Si MX printer is loaded with features that define state-of-the-art. HP's enhanced PCL5 and genuine PostScript™ Level 2 software from Adobe™ come standard. Printer environments are saved while switching. Setup is a cinch with network software utilities and drivers included in the box. And, if you need any reassurance about trouble-free operation, you have it in our Simple Network Management Protocol (SNMP) support.

At 17 ppm, this is the fastest LaserJet ever, with I/Os and RISC-based formatter capabilities matched to support its speed. It delivers impeccable 600 dpi print quality—thanks to HP's microfine toner and Resolution Enhancement technology. Plus, it comes standard with two 500 sheet input trays.

But what if you don't need the full capabilities of the HP LaserJet 4Si MX printer right away? HP offers another printer that's probably a perfect fit. The HP LaserJet 4Si printer delivers the identical 17 ppm performance and superb 600 dpi print quality. It also has room to grow. The two MIO expansion slots let you add HP JetDirect network interface or third party cards. And you can add on Adobe's genuine PostScript Level 2 software and SIMM memory modules, as you need them.

To find out more about the multiple-network HP LaserJet 4Si MX printer and the upgradable HP LaserJet 4Si printer just call 1-800-LASERJET, Ext. 7299.† Capabilities this advanced make a world of difference—in any environment.

HEWLETT PACKARD

Kiosks redefining public service

CONTINUED FROM COVER 1

mation technology. But the EBT system is just one example of the trend toward providing citizens with 24-hour access to routine government services at dispersed locations.

The most innovative state and local agencies are deploying networks of multimedia computer kiosks and teller machines in shopping malls, libraries and other public areas. These self-service terminals can handle such chores as car registration, job matching and information referrals.

In Colorado, the governor's office is using kiosks for an experiment in participatory democracy. The interactive computers ask citizens — who approved a tax-limitation measure last November — exactly where the state budget should be cut.

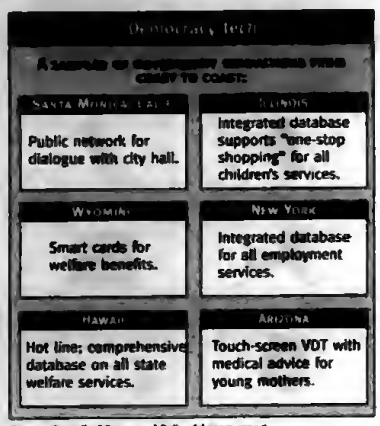
Some projects are now emerging from the pilot phase and are on the verge of becoming full-scale production systems. New Jersey Motor Vehicle Services, for example, has completed a pilot test of teller machines for vehicle registration and hopes for a statewide rollout later this year, a spokeswoman said.

A classic example is Info/California, a network of 15 IBM touch-screen kiosks that allow state citizens to find job opportunities, order birth certificates and locate a wide variety of government services. For security, the machines read the magnetic stripe on driver's licenses.

Last year, the California Health and Welfare Agency stationed nine multilingual kiosks in riot-torn Los Angeles to provide data on disaster assistance. "They've been so popular, we had a hard time getting them back.... So we'll leave them there," said Russell Bohart, director of the agency's data center in Sacramento.

Now the agency is evaluating bids for 100 more Info/California kiosks. "Of course, I recognize we're building a dinosaur. Someday, we really want to deliver this information to the home," Bohart said.

Pioneers in this field said self-service terminals should be used only for ultrasimple transactions, and they may never replace the need for government employees to deal with complex situations. But the terminals do allow agencies to handle routine transactions and reduce lines without adding more staff.



Source: Council of Governors' Policy Advisors report

A prime motivation for Maryland's EBT project was cutting administrative costs. Maryland officials said the traditional system costs the state $5.10 per client each month, including salaries, facilities, mailing and computer expenses. The electronic system shaves 75 cents off that figure, they said.

The state outsourced the operation to Milwaukee-based Deluxe Data Systems, Inc. under a six-year, $37.6 million contract. Even with that price tag, the EBT system is expected to produce net savings of $1.2 million a year, a spokeswoman said.

Some states, however, are not looking for dollar savings. The Pennsylvania Bureau of Motor Vehicles wants to deploy 10 teller machines throughout the state simply to provide better service through decentralization, said Norine Goss, manager of the bureau's Self-Service Terminal project.

Under the state's current system, all residents have to register their vehicles at the central office in Harrisburg — Pennsylvania has no regional motor vehicle bureaus — or they can mail or messenger their registration to the capital. Last-minute filers, however, must show up in person, where they face exceedingly long lines. As a result, people in outlying areas are clamoring to get teller machines in their regions, Goss said. The agency is evaluating a prototype system from NCR Corp.

Remember the basics

But information systems consultant Sheldon Cohen is less than enamored of the move toward government by kiosk. Cohen, vice president of MMA Consulting Group, Inc. in Boston, which advises state and local governments, said there is a danger in getting distracted from more basic systems. "It doesn't make much sense to have a kiosk if your financial, revenue management and public safety systems are not in order," Cohen said.

In addition, there is a variety of policy issues that must be addressed, according to a report published by the Council of Governors' Policy Advisors in Washington, D.C. For example: Will greater public access to government services translate into greater demand — perhaps more than the state can afford? Will individual privacy rights be protected if information is shared across program lines?

Maryland's EBT program faced lengthy delays while new federal regulations were written to accommodate this "uncharted territory," said Karen Walker, EBT project director at the Maryland Department of Human Resources.

"The federal agencies had to be careful because the decisions made for the Maryland program would be precedent-setting," Walker said. Now that the regulations are written, other states should encounter fewer hurdles and delays, she added.

Info-central

Experts said federal, state and local agencies should cooperate and combine their data for self-service kiosks so people looking for information on small-business loans or child services, for example, could get information in one place. Otherwise, there may be a confusing overpopulation of government kiosks.

Resources:
- "New Alliances in Innovation," a report published by the Council of Governors' Policy Advisors, Washington, D.C., (202) 624-5386.
- "Service to the Citizens," report No. KAP-93-1 from the U.S. General Services Administration, Washington, D.C., (202) 501-4860.
- The Alliance for Redesigning Government, Washington, D.C., (202) 347-3190.

Reinventing government

The trend toward government kiosks and teller machines is just one part of a larger movement known as "reinventing government," a concept that rolls re-engineering, quality management and customer service into one buzzword.

The pioneers of this bureaucracy-busting effort include the state of Arizona and the city of Sunnyvale, Calif. And now the federal government is jumping on the bandwagon.

"We intend to redesign, to reinvent, to reinvigorate the entire national government," President Bill Clinton declared last month as he launched a six-month performance review of federal agencies.

A key goal of the review is to "find ways to improve services by making better use of information technology and by making government programs more responsive to the customers they serve," a White House statement said.

At a time when businesses are streamlining, focusing on customer service and exploiting new technology, "government is virtually the only sector of American society that has yet to reinvent itself for the information age," said David Osborne, co-author of the 1992 book *Reinventing Government*.

Actually, some federal agencies are already experimenting with service-enhancing technologies, albeit cautiously. The Internal Revenue Service is piloting Touch-Tone tax filing [CW, March 1], for example, and the Food and Drug Administration wants to accept electronic filings from the drug industry. However, it must first rewrite 132 regulations that require handwritten signatures [CW, Sept. 14, 1992]. — *Mitch Betts*

Passing grades

If high-tech government can work in the rotten economy of Tulare County, Calif., it can work anywhere.

The Tulare County Department of Public Social Services has 25 IBM Personal System/2 multimedia computers that patiently explain the county's welfare services in any of six languages to the rural area's neediest citizens and lead them through the application process.

Citizens use the touch-screen PCs to answer questions that will determine whether they are eligible for public assistance. Each PC is linked to an IBM Enterprise System/9000 mainframe running an expert system that determines whether they are eligible. The expert system was written using IBM's Expert Systems Environment software.

Why the expert system? Because there are roughly 6,000 constantly changing rules and regulations covering welfare in California, said Anita Scrams, manager of the Tulare project. Therefore, it is virtually impossible for county employees to apply them all correctly.

In a test of 200 cases processed the old way and 200 processed by the expert system, the error rate for the manual system was 38%, while the computer made zero errors. The system is expected to save $20 million a year.

In the end, the system prints out a completed eight-page application — a vast improvement over the previously handwritten and often illegible applications — and a list of the documents needed to verify eligibility.

The $3.2 million system has enabled the agency to handle a growing number of cases without increasing staff, Scrams said. This is no small accomplishment in a county with chronically high unemployment (18.5% at last report) and approximately 30% of its population on welfare. — *Mitch Betts*

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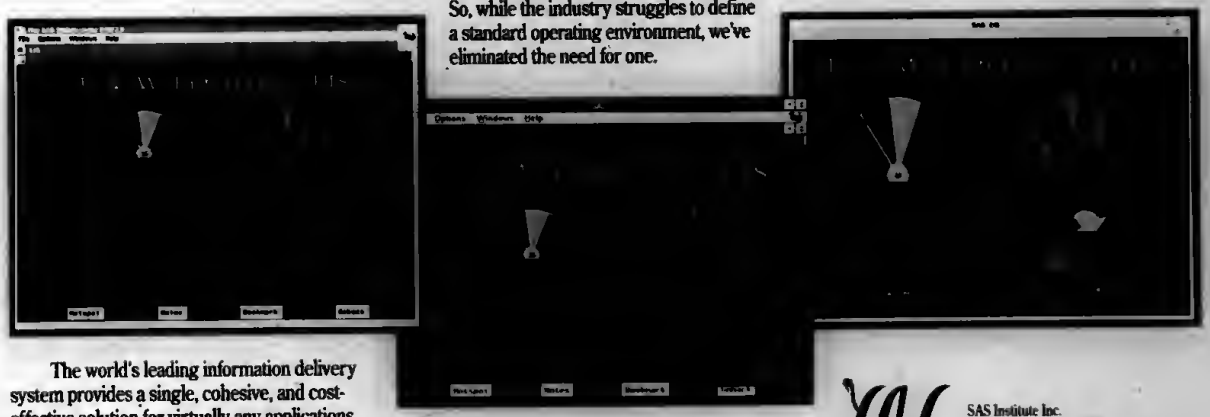

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BYTE 9/92

"In the Windows word processing world, Ami Pro 3.0 comes close to being perfect ...It stands above Word and WordPerfect both in its function and in its speed."

Home Office Computing 1/93

Software Digest **RATINGS REPORT**

The Independent Comparative Ratings Report for Selecting IBM PC Business Software

Vol.9, #6, September 1992

Advanced Word Processors for Windows	
	Overall Evaluation
1ST Ami Pro 3.0 for Windows	**8.7**
2ND Word for Windows 2.0	8.1
3RD WordPerfect 5.1 for Windows	6.1

"Ami Pro 3.0 takes the le as the Windows wo

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Software Digest Ratings Report, Vol. 9, #6, Sept. 1992. Among all word processors tested. Reports available upon request. *On weekdays, plus 7AM to 4PM on Saturdays. **Offer expires 9/30/93. Call for a list of eligible word processors. All rights reserved. Lotus and Ami Pro are registered trademarks and SmartIcons is a trademark of Lotus Development Corporation. Windows is a trademark of Microsoft Corporation. WordPerfect is a registered

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PC/Computing 12/92

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Windows Magazine 2/93

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Forbes 2/93

ad over Microsoft Word
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InfoWorld 9/28/92

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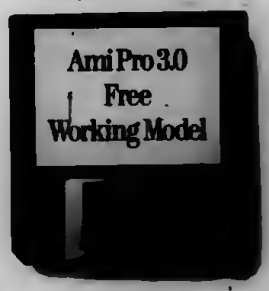

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NextWorld preview

PC vendors step up to NextStep 486

By James Daly
REDWOOD CITY, CALIF.

Next, Inc. last week began to unveil the big guns it needs to survive by announcing that a cadre of important PC manufacturers will soon ship their high-end machines with the NextStep 486 operating system preinstalled.

By the May 25 opening of NextWorld Expo in San Francisco, NextStep will be available on Intel Corp. 1486- and Pentium-based machines from Dell Computer Corp., Data General Corp., Epson America, Inc., NEC Technologies, Inc. and Siemens/Nixdorf Informationssysteme AG, said Chairman Steve Jobs. Hewlett-Packard Co. will allow bundling at the reseller level, while IBM is reportedly close to a similar arrangement.

NextStep 486 will also be demonstrated running on more than 100 different PCs at the show, including models from Digital Equipment Corp., AST Research, Inc., NCR Corp., Zenith Data Systems, Toshiba America Information Systems, Inc. and Gateway 2000 Ltd.

The enlistment of the manufacturers is needed for the survival of Next, which in February scrapped its slow-selling workstations in order to focus solely on its highly regarded NextStep software.

NextStep has been available for more than four years and is well-regarded as an object-oriented application development system, but its proprietary nature has made it a difficult sell. Analysts said the release of a version for Intel platforms — NextStep 486 — will widen its appeal to users looking to develop custom in-house applications quickly.

According to International Data Corp., NextStep is slightly less than 70,000 workstations last year, compared with 217,000 by market leader Sun Microsystems, Inc.

NextStep users have long praised NextStep's design as one that makes it easier to reuse large chunks of software code. They said it delivers today the kind of object-oriented programming environment that potential rivals such as the Apple Computer, Inc./IBM joint venture, Taligent, Inc., and Microsoft Corp.'s Cairo project will not deliver until 1994.

"NextStep is a superb way to build apps quickly, so if they can make NextStep [486] fly, that would be a great thing," said Charles Mayer, manager of computer systems and services at Mobil Corp.'s offices in Fairfax, Va.

May not lead for long

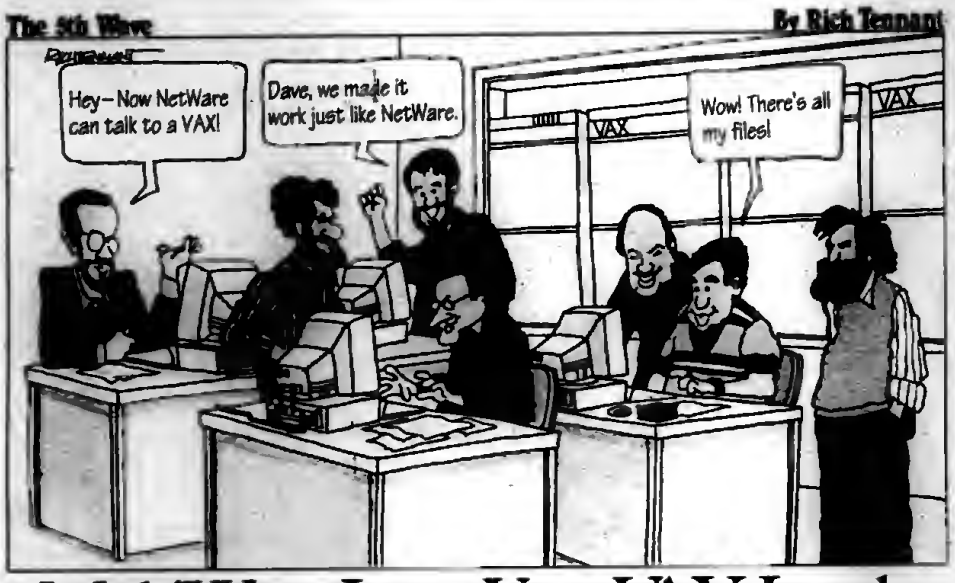
But analysts said the chances of Next's taking over the object-oriented development market are slim and that Microsoft and Taligent will likely be the real operating system powerhouses in the future.

"At best, Jobs can hope to gain a loyal following where creating custom apps fast is a priority," said Tim Bajarin, president of Creative Strategies Research International, Inc. in Santa Clara, Calif.

Next also faces competition from smaller competitors. Already, companies such as ParcPlace Systems, Inc. and Digitalk, Inc. offer similar well-regarded platforms for crafting customized applications.

NextStep 486 also presents significant financial hurdles, in addition to shelling out $795 for NextStep 486, users may need extra circuit boards, memory and disk drive capacity to bring a typical PC up to the sophisticated color, sound and video capabilities of the Next machine. That could potentially add several thousand dollars to the cost.

At stake is nothing less than the survival of the company. "If they do not make money with this [software] strategy, it could be tough to survive," Bajarin noted.



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Tech Talk

Crowd control

A neural network program developed to help military pilots deal with enemy threats could soon be used to ease traffic congestion around stadiums. Computer researchers at the Georgia Institute of Technology in Atlanta have adapted the military software to a traffic control program that monitors congestion and regulates traffic signals to optimize the flow of vehicles.

A light touch

AT&T Bell Laboratories and Harvard University researchers said last month they had succeeded in pushing individual atoms with a photon beam. The technique, which uses a large number of photons to deflect a slow-moving atom, might someday replace current lithography systems, which now produce lines on integrated circuits one-half a micron wide. The technique also helps construct even tinier devices.

Worth a picture...

NEC Corp. reported last month it will begin selling this year a speech-recognition system capable of recognizing approximately 1,000 words of naturally spoken Japanese.

'What's on channel 1376?'

BroadBand Technologies, Inc. announced last month a technology for providing up to 1,500 interactive video channels over an Asynchronous Transfer Mode network. According to the Research Triangle Park, N.C.-based company, its system, which will use the Motion Picture Experts Group's digital video compression standard, will be available in late 1994 to coincide with telephone company plans to begin large-scale video dial tone platforms. Broadband's current fiber-based distribution system has already been deployed at five of the seven regional Bell operating companies, GTE and Puerto Rico Telephone.

L.A. awaits 'smart' highway

Toll road will use computerized sensor to help drivers avoid jams

By James Daly

THE UGLY, SNAKING TRAFFIC jams that are as much a part of life in Southern California as palm trees and beach boys may soon become a thing of the past.

With bumper-to-bumper cars tying up major thoroughfares and funds to build new roadways scarce, technicians are concocting new "smart highways" to make existing roads work harder.

The most ambitious project yet began early this year in suburban Los Angeles, where the California Private Transportation Co., MFS Network Technologies, Inc. and Texas Instruments, Inc. began creating a 10-mile toll road that uses a sophisticated computerized sensor and communications system to help drivers avoid jams.

Toll (plaza) free

Best of all, the road can operate without toll plazas, which are often a source of both backups and pollution from idling cars. A similar system is planned near Washington, D.C., to retrofit the toll road that connects Northern Virginia's Dulles International Airport with the capitol. Other projects are on the drawing board in Florida and Texas.

"It's ironic that we've been in the toll collection business for about 200 years and it still works the way it always has, with a collector taking money from each vehicle," said Kevin P. Moersch, president of Omaha-based MFS Network Technologies.

The $100 million, two-year California project was designed to link California's Orange and Riverside counties. The target road is State Route 91, which today handles an average of 225,000 vehicles each day. That number is expected to grow to nearly 340,000 by 2010.

Under the privately funded plan, four express toll lanes will be built where a median strip now exists. While Route 91's existing eight lanes will continue to be toll-free, investors are betting that commuters will pay a typical $1.50 toll to travel on the less crowded addition and cut their commuting time.

STEPHANIE FAUCHER

The increase in volume the roadway can handle is expected to be dramatic. While 800 cars usually pass through a toll lane in one hour, 2,500 cars could pass through the Route 91 system each hour.

Here's how the system works:

- Commuters choosing to participate in the new tollway are issued an automatic vehicle identification (AVI) tag, which they clip to a rear-view mirror, place on a dashboard or attach to a license plate. The tag is about the size of a thick credit card and incorporates an antenna, microchip and lithium battery. It costs the driver about $30.
- As a car approaches the toll road, sensors in the pavement let the tollway computer know a car has entered. A transceiver overhead makes radio contact with the AVI tag and reads the data stored there. That information is then relayed via fiber-optic lines to the highway's control center computers, which charge the toll against the driver's prepaid account.
- Surveillance cameras record the license numbers of cars without AVIs. Fare beaters can be nabbed by police or fined by mail. Those same cameras also enable managers to keep tabs on traffic and decide whether to raise or lower tolls.
- To prevent rush-hour jams from spreading to the toll lanes, planners have formulated a "congestion pricing" scheme that ups the tolls along the road as traffic increases. Tolls of up to $9.99 can be implemented.

The AVI scanning process takes about 1/50th of a second and has been tested at speeds of up to 160 miles per hour, Moersch said. Through each tag's unique code, the reader can distinguish vehicles traveling within 30 centimeters of each other. It can even identify individual motorcycles riding side by side in a single lane.

Because the new tollway is still two years away from completion, the particulars of the computer machinery have not been finalized.

The group putting together the project is tentatively considering booking up IBM RISC System/6000 workstations to a Digital Equipment Corp. VAX at the computer control center.

Tech hybrid produces offspring

By Ellis Booker

The marriage of two promising computer technologies, fuzzy logic and neural networking, has begun to breed products for the computer industry.

The appeal of merging the two is this: A neural network can be used to create a fuzzy rules generator. Once the neural network "learns" the rules underlying a particular application or system (based on its behavior or input parameters), the fuzzy logic generator takes over to create the fuzzy rules.

According to Mountain View, Calif.-based Frost & Sullivan Market Intelligence Research Corp. (MIRC), the market for such hybrid products is set to explode. In its 1992 report, the firm predicted that the combined market will more than double from $1.2 billion this year to $2.54 billion in 1994, for a revenue growth of 110%. By 1998, MIRC said, it expects the worldwide market to be nearly $10 billion.

MIRC also predicted that these products, now overwhelmingly proprietary engineering development tools, will shift to standard software and microchips.

Last month, National Semiconductor Corp. in Santa Clara, Calif., announced what it called the first user software product to combine neural network learning to generate fuzzy logic rules for programming a microcontroller chip.

Called NeuFuz4, the software lets systems designers develop, test and implement fuzzy logic solutions for National's COP8, an 8-bit embedded microcontroller.

The $10,000 NeuFuz4 Development System includes Microsoft Corp. Windows, COP8 development tools, documentation, consulting and technical support.

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Sound bytes

On the plane en route to the Society for Information Management's Institutional Member Conference for CIOs of very big companies last week, I had the pleasure of chatting with Kathleen Taylor, senior vice president of Cigna. I asked her to characterize the pace of technological change today with that of the previous two decades.

She said something like this: "You can take the changes from the late 1960s to the mid-1980s, and they pale in comparison to what took place in the last six years. And the scary thing is, the rate of change is increasing."

So it is a little surprising that the pendulum between the CIO's business acumen vs. his technology know-how appears to be swinging decidedly back to a greater emphasis on pure technology issues. That is also one of the key findings in the third *Computerworld*/Andersen Consulting survey of senior corporate executives (see story page 86).

These senior non-IS execs are becoming more computer literate and clearly want their IS chiefs to have a greater balance between business and technology skills.

And why not? Just a few short years ago, roughly 85% of all application development took place in IBM or DEC environments that had taken root 30 years before. But by 1995, the vast majority of application development will take place in some yet-to-be-determined environment that is utterly alien to the old VMS/MVS world that is fading fast.

Are the CIOs, many of whom recently spent no more than 10% of their time on technology issues, ready to lead the mass migration to the brave new world of distributed computing? They'd darn well better be.

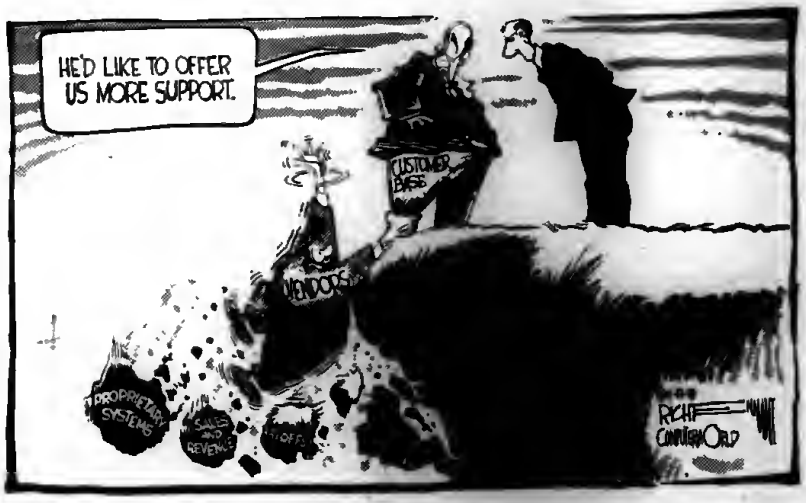
The problem is, many information chiefs have become very comfortable in the role of CIO as businessperson almost exclusively. They cut their teeth on the basic architectures of the 1960s that endured for so many years. The world of pure management must have had a tremendous allure.

Then the continental plates that are the technological underpinnings of the profession shifted dramatically, and today the CIO has to reacquaint himself with a very different set of constructs. This has to be as jarring as the changes themselves.

As Paul Strassmann wrote on the opposite page last week, it is time for CIOs to stop aiming at other jobs (such as the COO or CEO) and start paying more attention to their own.

Bill Laberis

Bill Laberis, *Editor in chief*



Back on track

Regarding "How to get 'runaway projects' on track" [CW, March 15]: The experts missed the essential reason that overruns occur. Most large, complex projects were designed to deliver all of the functionality in one implementation, following the conventional wisdom of the 1970s-era development methodologies. When this happens, documentation and training become significant issues, as the article points out.

Overruns occur because the project team and its customers have not learned enough to deliver the system effectively, including real business needs, enabling technology and the customer/provider working relationship.

The most effective way to climb the three learning curves is to carve out a subset of the functionality and deliver it early. The remaining functionality is then delivered in releases, much the same as commercial software is developed. The later releases go much more quickly because the learning has taken place with a smaller piece of the system in a shorter time.

All of the points mentioned in the article, such as proper sponsorship, better estimates and proper plans, are also important, but the best project managers cannot succeed with these alone unless they design their projects for maximum learning effectiveness.

W. B. Foss
Stamford, Conn.

Salute to the Army

The article about the Army's Reserve Component Automation System, "Army enlists client/server" [CW, March 29], in which Maj. Gen. Gary Stemley repeatedly mentions the many benefits of using Ada, is a great piece of reporting on one major success story with Ada.

This is the first time in about four years that I have seen Ada mentioned so prominently in a *Computerworld* article.

Kudos to Stemley for doing something that no one else inside the Department of Defense is willing to do.

Greg Aharonian
Belmont, Mass.

Windows 3.1 is OK by him

Paul Gillin is to be congratulated for being able to make Microsoft Windows 3.1 look as bad as IBM OS/2 really is ["Your turn, Windows," CW, March 22].

Windows 3.1 is a superior product, considering that it has to live with DOS. I am running Windows as a base in a multiuser environment for the purpose of accessing commercial and in-house applications on Novell local-area networks as well as emulating our IBM 3090 mainframe.

The benefit of Windows is that if the system is planned carefully, it will work very well while allowing one to have many applications open simultaneously and almost instantaneous switching among them.

I am anxiously awaiting the release of Windows NT. Soon there should be no reason to even consider IBM OS/2.

Gerald I. Shkarovsky
Chicago

Step ahead

I read with great interest and enthusiasm Charles Babcock's article "The Next direction" [CW, March 22]. I found it to be an excellent affirmation of Next, Inc.'s strongest feature—its amazing technology.

But I wanted to highlight a major point that he missed. NextStep's lead over other object-oriented development architectures is not because of the icon shelf capabilities he saw but the immense library of objects that Next offers.

NextStep provides its developers with 4 million lines of reusable object code. This code is categorized in NextStep's seven object kits.

It is these kits, the large number of third-party objects and soon-to-be-announced object kits from Next that give NextStep its immense lead over other development environments. While Cairo and Taligent may copy NextStep's architecture in two years, they will need five years to write and debug all of the code that you can already get with today's NextStep.

Garrett Rice
Boulder, Co.

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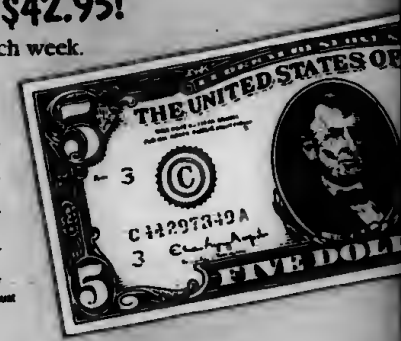

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Open systems: A bad idea even if they were possible

E. Ted Prince

So the future of computing is open systems — systems that fit together and communicate seamlessly? I don't think so.

Even if this were desirable, which I don't believe it is, I doubt it would be possible. This, of course, means a lot of people may be wasting a whole lot of time.

We wise old people of computing recognize a law that says once a core system becomes "open," our clever vendors immediately find something highly proprietary to add to it. So an operating system, once "open," is "enhanced" with a proprietary database system and, after it is cloned, a proprietary user interface or communication system. As systems become smarter, the potential for adding more closed, proprietary software increases.

This is not a knock on vendors. They are simply doing what they have to do to survive. What we technical professionals tend to forget is that for vendors, "open" means clones and competition, lower margins, even death. The only way for them to have a future is to continue to differentiate, which means closed and proprietary systems.

"But what about Unix?" you all cry. To this I say, "Which one?" Are we talking about AIX, Ultrix, System 5, Berkeley, OSI, NextStep, SCO, Solaris, USL or Unix flavor Y with Novell?

Unix folks may be technological idealists, but they haven't even got it together at the operating system level. And that's just as well,

really. If they did, and we could all get it for free from our local bulletin board, there wouldn't be money for support. We'd all have to migrate to something proprietary and supported.

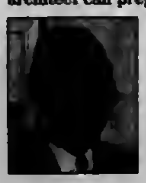
Besides Unix, which is clearly not open or likely to be, where is our open system? Will it be OS/2, PowerOpen, NextStep, Taligent, Windows NT or an as-yet-unannounced Windows Plus? Don't bet on it.

Maybe open systems should not be viewed from a purely technological level but as cooperation among vendors on standards. From where I sit, though, the best cooperation seems to come from vendors building proprietary (as opposed to closed) systems. Cooperation at the standards level seems kind of tame by comparison.

Our economic system rewards genius, and international standards committees are not renowned for that. Committees such as these stand for the lowest common denominator.

The true software revolutionaries do not sit on committees, and they cock their snoots at standards. SAA was supposed to be open. R.I.P. Sematech is going the way of all flesh. International standards seem to be honored in the breach. Why? Because competition and survival are the name of the game, and no one ever earned their bonus bringing their competitors up to the same standard as their own.

The future will belong to proprietary systems created by entrepreneurs who refuse to be bound by logicians' schemes. These systems will encompass ideas and functions we can scarcely dream of and that no standards architect can prepare for. They will generate



wealth that would make Bill Gates blush.

Then eventually, inevitably, the imitators and cloners will jump in to suggest "open" systems based on these products, and we will start again.

Prince is managing partner of Prince Consulting, Inc. in Hawley, Pa. He was formerly president of a national computer services company.

How Microsoft fell: A look back

COUNTER-INFORMATION *by* Michael Schrage

The following article comes from an anticipated April 2000 issue of The Economist *via the transtemporal Internet node called "ScenarioNet."*

Yes, Microsoft's Bill Gates is still a billionaire, but his wealth and influence have dwindled dramatically. The entrepreneurial enfant terrible who once confided that his greatest fear was to become the Armand Hammer of software is now being humiliated by a midlife crisis of market forces beyond his grasp. Gates' many enemies are virtually wiggling with glee. No one roots for Goliath.

To be sure, Microsoft and its middle-aged master are still forces to be reckoned with. The company retains its market share in multimedia operating systems and enterprisewide infranetworks, but it has effectively lost the ability to command a premium for its services. As a septibillionaire, Bill Gates is a charismatic visionary; as a mere duobillionaire, he's just another really clever competitor.

As with most tales of corporate decline, the most grievous wounds were self-inflicted. Microsoft's lust for market share consistently led the company to sell its systems before the kinks had been worked out.

For years, this practice yielded an optimal blend of preemptive competitiveness and revenue. However, when the company shipped its Baghdad operating system in 1996, it had more bugs than a Manhattan brownstone. Catastrophic data losses resulted, and furious customers sued.

In its historic 1998 *Aetna* v. *Microsoft* ruling, the appeals court noted: "While competitive zeal is essential in a market economy, it does not excuse innovators from exercising appropriate standards of professional care. Microsoft's willful disregard of its own internal standards and generally accepted software industry practice not only makes it liable for actual damages but also, in the opinion of this court, provides essential justification for punitive damages."

The decision ultimately required Microsoft to set up a mere $500 million reserve, but the company's market value dropped by nearly one quarter, and legendary white knight investor Warren Buffet resigned from the board.

Even as the company was recovering from litigation, innovation struck at the heart of Microsoft's technical eminence. NEC, Hitachi, Samsung and a clutch of entrepreneurial U.S. silicon firms introduced the first generation of "inferential microprocessors" in 1995.

Using fuzzy logic and neural network design techniques, these chips could effectively "infer" an operating system from the software's object code. In other words, these microprocessors could "grow their own" operating systems on a program-by-program basis. This development completely undercut Microsoft's lucrative operating systems business and badly hurt the Apple/IBM multimedia joint venture. Of course, Microsoft sued, but it lost in both Japan and the European Community.

This lethal combination of liability and technical superprocessing has more than halved Microsoft's market value from its 1991 high and undermined the company as a perceived market leader.

Can an intense but seemingly tired Gates rekindle his company's competitiveness? Most observers are skeptical.

Say, didn't the U.S. Federal Trade Commission once try to dismember Microsoft at the beginning of this decade?

Schrage consults and writes about how technology reshapes the way people interact. He is a visiting scholar at the MIT Sloan School and the Laboratory for Computer Science and author of a book on collaborative technologies, *Shared Minds* (Random House, 1990).

WHY NOTEBOOK DESIGN IS AND AIRPORTS AS IT IS ABOUT

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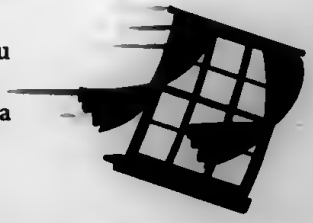

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Charles Babcock

Mainframe mainstay

At a time when everyone knows the mainframe is going the way of the dodo, I would like to submit a dissenter's brief.

I believe the mainframe will be around past the year 2000.

Where it survives, I believe, the mainframe will take on an increasingly important role. I believe many organizations have already concluded that, no matter how powerful desktop machines get, their business won't function without a mainframe.

And I believe that, in the end, the rapid growth of desktop computing will create a demand for more mainframe MIPS.

These, of course, are very unPC statements — neither PC-oriented nor politically correct. But if I were wrong about this, the number of MIPS on mainframe processors wouldn't still be increasing.

Increasing?

That's right. Despite all the stories about "we phased out our mainframe," the number of MIPS on mainframes is increasing. Computer intelligence says the number grew to 467,000 in 1992 from 399,000 the year before, an increase of 14.6%. This is lower than the historic rate of increase but respectable, considering the mainframe's presumed demise.

This is not to say that the number of IBM 3090-ES/9000 family mainframes isn't decreasing. it is. Computer intelligence pegs the U.S. mainframe population at 24,000 at the end of 1992, compared with a peak of more than 27,000 at the end of 1989. But the decline in absolute numbers doesn't necessarily disprove my point.

Better than ever

Many of the survivors represent consolidated machines in consolidated data centers. Today's high-end mainframe represents the equivalent of 20 machines of a decade ago. *Of course* the number is decreasing.

The mainframe's primary distinguishing characteristic is its ability to move massive amounts of data, not just through the CPU, but in synchronized fashion in and out of the machine. Main memory, buffers, caching, external storage and CPU all run in balance as the operating system prefetches instructions and data to feed them through the CPU the instant it is available.

Theoretically, four Pentium PCs will soon be stitched together to equal the CPU power of a mainframe, but each will be constrained by the single 1½M- to 2M-byte data path between its microprocessor and storage.

A mainframe coordinates 256 channels, each capable of carrying 17M bytes per second. To achieve the PC equivalent I/O, 2,176 PCs would have to be networked together in a closely coupled fashion and coordinated to work on the same task at the same time. Needless to say, it's a feat far beyond existing LANs.

So what is all this coordinated power good for? Right now, most corporations still depend on their mainframes to do the time-sensitive batch processing that makes up their core business processes. If the mainframe is busy interacting with end users and managing the network by day, it must perform data collection and update routine processing tasks in payroll and accounting, etc., through a constrained window at night. Most firms are trying to offload new applications from the mainframe because they don't have a comfortable margin of error as it is.

Eventually, these core applications will be migrated to lower cost computing systems, but right now there is a degree of security and control on the mainframe, thanks to its well-documented user-unfriendliness. And because of these characteristics, the mainframe will eventually become a central repository for data, able to take it in and farm it out at massive rates under the firm control of IS.

Babcock is *Computerworld*'s technical editor. His MCI Mail address is 575-2737.

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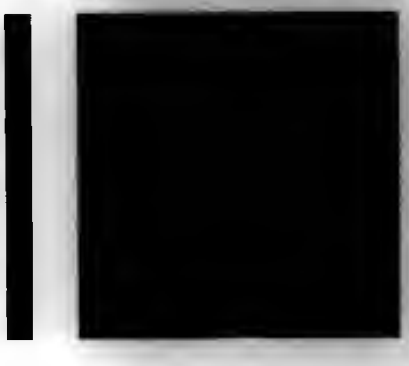

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Graphics performance

Vendors hop on local bus

By Michael Fitzgerald

The move to datahog graphical user environments such as Microsoft Corp.'s Windows, and thus much slower screen refresh and data transfer rates, has users and vendors hopping on the local-bus bandwagon.

"I love local bus," said Joseph Anello, MIS director at the University of Pennsylvania Medical Center's John Rheabarton Surgical Associates in Philadelphia. Anello said that as a test of a new local-bus system, he opened four major presentation packages at once and started applications, with no degradation in performance.

The reason is that in a system with a local bus, the graphics instructions bypass the data bus and run at the speed of the microprocessor, greatly increasing the screen refresh rate for users running large, Windows-type programs.

Weak link

Today's graphical user software has exposed a weakness of the AT bus and its follow-ons. The AT bus and the Extended Industry Standard Architecture (EISA) buses run at 8 MHz, while the Micro Channel Architecture (MCA) bus runs at 10 MHz. However, internal processor speeds are up to 66 MHz.

New local-bus standards, such as the VL bus from the Video Electronics Standards Association (VESA) or Intel Corp.'s Peripheral Component Interconnect (PCI), run at 40 MHz and 33 MHz, respectively.

"We did some internal testing of local-bus machines from Gateway vs. nonlocal-bus machines from Gateway and Compaq, and there was a fourfold increase in speed with the integrated local-bus technology," said Michael J. Henderson, PC coordinator at James River Corp.'s Neenah Technical Center in Neenah, Wis.

Henderson said that his shop has since installed VL-bus systems from Gateway 2000 Ltd. for its Windows users "and improvement was definitely noticeable."

With IBM PC Co.'s recent announcement of ValuePoints with local bus, all the major corporate hardware vendors have announced local-bus systems.

According to analysts, it is the wave of the immediate future, particularly because local bus can also be used to speed data transfer rates from hard drives or Small Computer Systems Interface devices. "We're surprised any time we hear a new product announced without at least accelerated video," said Ted Julian, an analyst at International Data Corp. in Framingham, Mass.

Vendor scuffles

But the local-bus phenomenon is complicated by vendor battles. Intel, although a VESA member, does not support the VL bus. It instead touts its own PCI as the way for vendors to go, particularly as they roll out Pentium-based systems. Dell Computer Corp., another VESA member, approved the VL specification, then sent a letter to selected vendors informing them that systems using it infringed on a Dell patent.

The variety of vendor approaches also complicates things. While IBM PC Co., Gateway and a number of smaller companies have chosen the VL bus, Dell, Compaq Computer Corp. and AST Research, Inc. have adopted proprietary local-bus approaches.

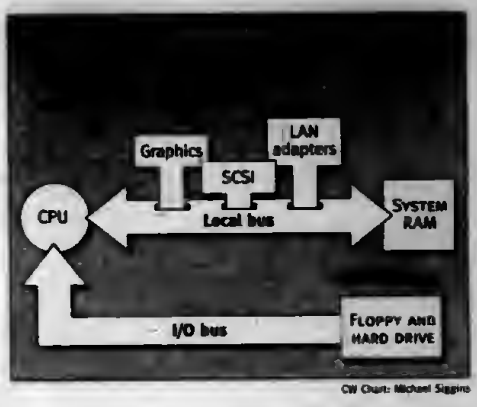
The battle lines remind some users of MCA vs. EISA.

Vendors "should shut up and stop putting proprietary equipment out — all that squabbling does is mess things up for the end user," Anello said. His company's systems use the VL bus, and he said his ideal future would be systems that support both the VL and the PCI bus.

Analysts said costs make this unlikely, and most expect PCI will win the battle with VL in short order.

All the major PC makers are expected to support PCI.

"The real question is: If I'm going to have on-motherboard video, which is the other trend (in hardware design), then what do I really need a local-bus slot for?" asked Andrew M. Seybold, editor-in-chief of "The Outlook on Professional Computing," an industry newsletter in Brookdale, Calif. According to Seybold, local-bus slots give vendors and users an insurance policy for new developments in hardware.



CW Chart: Michael Siggins

The bus: Ready to depart?

In time, the local bus will die, as more and more functionality gets moved to the motherboard or to the central processor. "The overall concept of local bus will eventually be irrelevant," said Will Strauss, analyst at Forward Concepts Co., a Tempe, Ariz., market researcher. Strauss said this would take at least two more product cycles, though.

IBM's future rests in new technology, IS managers say

By Michael Vizard

While IBM has embarked on a course to compete with Microsoft at every level of the desktop, information systems managers are advising Big Blue that it should focus on creating new technologies such as the Taligent object-oriented operating system rather than re-engineering commodity products like DOS.

"We don't want to hear about infrastructure battles. A new version of DOS or a new API is not what I would call adding value. We need to get out of my dog is bigger than your dog comparisons," said Craig Goldman, senior vice president and chief information officer of The Chase Manhattan Bank NA in New York.

"I think customers are happier when they have fewer choices. Choice can be useful, except when you're talking about commodity products. I think they are tired of the fighting between vendors," said Esther Dyson, president of EDventure Holdings, Inc. in New York.

Focus on next generation

Instead, IBM should focus on adding value by providing integration services that will make it possible to build applications that are not currently possible.

In particular, IS managers said IBM needs to focus on the next generation of desktop computing technologies, rather than compete with Microsoft Corp. products such as DOS and Windows.

IBM, *page 43*

DEC series a worthy effort

By Christopher Lindquist

While Digital Equipment Corp.'s launch into IBM-compatible PC hardware may have been slow in PC industry terms, it has certainly tried to make up in enthusiasm what it lacked in timeliness.

The latest round of PC products to come from DEC's Taiwan-based manufacturing plant is the DECpc MT series, a line of processor-upgradable Intel Corp. i486-based systems in "micro-tower" cases that can be used either on the desktop or deskside. But DEC's machines are less "bleeding-edge" than they are high-quality, solid-performance systems.

Our test system was a DECpc 466d2 MT with a 486DX2/66 processor, 128K bytes of cache memory (expandable to 256K bytes), 8M bytes of random-access memory and a 245M-byte integrated drive electronics (IDE) hard drive. Standard systems come with 4M bytes of memory that can be expanded to 64M bytes and a 122M-byte hard drive. The DECpc MT line has a built-in local-bus video with 512K bytes of video RAM (upgradable to 1M byte) and Windows acceleration (the motherboards have no local-bus slot), an integrated IDE/floppy drive controller and on-board serial and parallel ports.

The result of all this functionality being built on the motherboard is that all six 16-bit XT/AT bus slots are available. Five drive bays, a monitor, a mouse, MS-DOS 5.0 and Microsoft Corp.'s Windows 3.1 complete the package.

PRODUCT TESTDRIVE

The MT systems are touted by DEC as being "ergonomically designed" and "compact." While the latter is certainly true, I differ with the former. The press release talks of the "bold ideas" in the system, but the minitower case has been available as an option on many "second-tier" PC vendor systems for years, and just how "ergonomic" it is remains up for debate.

The 7- by 17- by 17-in. cases are indeed smaller than traditional tower cases and fit quite well on a desktop. However, you no longer can place the monitor on top of the case, so the amount of desktop real estate used (unless you invest in a monitor stand) is similar to the

DEC series, *page 45*

James Daly

DOS 6.0 under fire

Germ warfare...
Only weeks after its debut, the antivirus features in Microsoft Corp.'s newly released DOS 6.0 are coming under heavy fire. First off, get your hands on *Inside MS-DOS 6* (New Riders Press; $39.95), which puts the operating system's antivirus features through the paces. The result: In a scan of 1,590 viruses, Microsoft's antivirus scanner detected only 1,009 — or about 63%. Of the 1,009 it detected, it could not remove 978. Not good.

Users have also lambasted the scanner for being too slow and having a clumsy interface. To make matters worse, Microsoft promises upgrades via its electronic bulletin board, but it does not promise that they will be free. An angry user said: "DOS 6.0 [virus protection] is insufficient, and Microsoft wants extra money to make it right [through upgrades]. I, for one, cannot take this offering from Microsoft seriously."

Just the fax, ma'am...
It wasn't just luck that led investigators looking into the World Trade Center bombing to discover that the source of the explosion was a Ryder rental van. Through the computer technology of the National Insurance Crime Bureau (NICB) in Palos Hills, Ill., a partial vehicle identification number found in the rubble was recreated. It ultimately led to the identification of the van and the driver.

The NICB offers an insurance-crime fighting, IBM DB2 network that collects and exchanges information on more than 200 million records. The system allows users to interactively search for signs of insurance fraud and vehicle theft data. NICB is in turn hooked to other crime-fighting networks, like the National Law Enforcement Telecommunications System and the FBI's National Crime Information Center. Nice work.

Sticky fingers...
The thing that makes portable computers so beneficial — their easy transportability — also makes them tempting targets for thieves. But if your portable is pilfered, there's still hope. IDX Technologies, Inc. in Setauket, N.Y., has recently released the $49 Computer Owner Protection (COP) for Macintosh, which gives each system a unique identification code and records that code at various locations around the hard drive. After a missing computer is retrieved, police can activate the software, read the code and learn where to return the computer. The company has a similar system for DOS.

Old dog, new trick...
Micah Development Corp. in Cambridge, Mass., has come out with a new security package with an interesting twist. The security program, called Full Armor, is not memory resident, which means it does not slow down system performance or conflict with resident programs.

Switch hitter...
A reader asks, "Are there any viruses that can propagate across platforms?" Good question, considering the number of mixed platforms out there. So I asked an expert — specifically, David Stang, director of research at the International Computer Security Association in Washington, D.C.

Stang says no, he does not believe any viruses can spread from an IBM to a Macintosh or vice versa. Such a virus would be too big and would probably be easily detected.

Plus, he says, there are no cross assemblers that will write code that will run on two platforms. More importantly, "most people probably only know one computer language really well. To find one who knows several would be rare. To find one who knows both, is not gainfully employed making a huge salary and spends his days making computer viruses would be rare indeed."

Daly is a *Computerworld* West Coast senior correspondent.

As Unilever added new divisions,
As their brands multiplied,
As the growth factor unbalanced
their MIS equation...

IBM's future rests in new technology

CONTINUED FROM PAGE 41

"They oeed to move forward with Taligent and the PowerPC," said Sally Atkins, a consultant at Joho Hancock Financial Services in Bostoo.

Currently, IBM's desktop strategy calls for offering a DOS alternative to Microsoft's DOS product, positioning OS/2 against Microsoft's forthcoming DOS 7.0 system, lining up AIX and a portable versioo of OS/2 against Windows NT, while also competing against Microsoft in a race to beat that company's Cairo object-oriented system to market.

It is the race to market between Cairo and Taligent, which IBM ts developing with Apple Computer, Inc., that may ultimately determine IBM's success.

In general, object-orieoted operating systems will provide a much richer, seamless environment where the network, the kernel and the applications are well-integrated, compared with the discrete tools that make up computing environmeots today.

"Every major vendor is talking about implementing some kind of object technology," said Liz Barnett, vice president of market research at New Science Associates, Inc. in Westport, Conn.

"Object-oriented systems will be one of the key technologies for the next century, and IBM has the internal resources to help people constructively dismantle their 15- to 20-year-old systems as they move to client/server systems that will use object technologies," said Natasha Krol, a vice president at Meta Group, Inc. in Westport, Conn.

Specifically, Krol said, IBM needs to provide the tools to help encapsulate existing applications in objects, while creating oew tools that will help companies develop new applications that will re-engineer their business processes.

"IBM has a lot of clout that they should use to help consolidate the various competing technologies in the market. For example, IBM recently did a very good job working behind the scenes to help end the Uoix wars," Krol said. And that ability to provide services across multiple technologies may also be the key to competing successfully with Microsoft.

"IBM should stress its open system approach, like its support for DCE, while Microsoft is trying to push their own standards," Atkins said.

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Apple beefs up Performa line

Apple Computer, Inc. has expanded the breadth of Macintosh offerings for the home and first-time buyer with the introduction of three new models in its Performa line.

The Performa 405, Performa 430 and Performa 450 will fill out the middle of the line while the Performa 200, Performa 400, Performa 600 and Performa 600 CD will remain unchanged. Apple officials said they expect retailers to charge between $1,299 and $1,799 for the new models

Apple plans to sell the oew additions as a complete one-box solution. Included in the package will be a color monitor, bundled software and at least one integrated application — either Claris Corp.'s ClarisWorks or WordPerfect Corp.'s WordPerfect Works, depending on retail location — that provides word processing, spreadsheet, database, graphics and communications functions.

The Performas will also come bundled with a modem and two on-line services. All three oew models use the Motorola, Inc. 68030 microprocessor.

— James Daly

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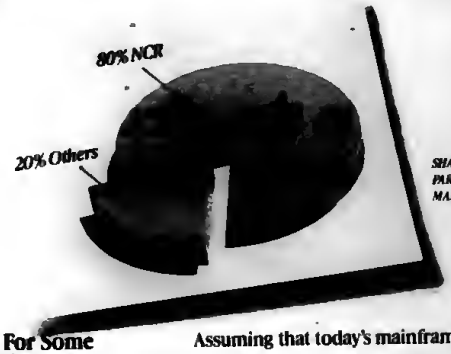

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Spreadsheets

New way to play Excel data

By Michael Fitzgerald
PORTLAND, ORE

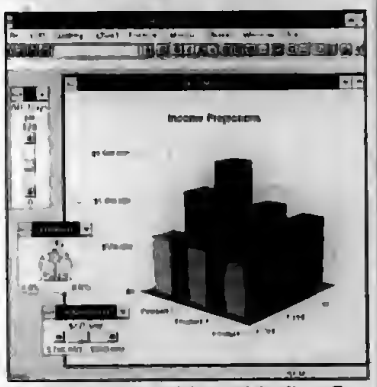
Excel jockeys may have a new way to ride their spreadsheets, thanks to Golden Technologies, Inc., a start-up that recently began shipping its Sliders & Dials add-on for Microsoft Corp.'s Excel for Windows.

Sliders & Dials is an interactive tool designed to give Excel users the ability to immediately see the impact of changing numbers in given cells. For instance, by defining a cell for interest rates, a user could incrementally gauge a variety of payment schedules.

"We're evaluating it because it has the potential for more flexibility and quicker interaction with adjusting variables and doing 'what if' kind of analyses," said Ted Blank, MIS manager at Cellular One Corp.'s Oregon operations here. Blank said Sliders & Dials might give his users "ways to think outside the box and be a little more productive."

However, he added that "it presents a new way of doing things, and finding an immediate application for that kind of product is sometimes a challenge."

Portland-based Golden Technologies' founder and President Beverlea Kramlich said Sliders & Dials was a step toward giving desktop spreadsheet users the kind of interactive visualization tools currently found on high-end Unix systems and mainframes. Initially, Sliders & Dials takes advantage of drafting and drawing capabilities in Excel. In the future, visualization tools will be added. The product retails for $99.95.



Golden Technologies' Sliders & Dials *allows Excel for Windows users to immediately see the impact of changing numbers in cells*

DEC series

CONTINUED FROM PAGE 41

amount taken up by a standard desktop PC. And if you place the MT on the floor, its lower height forces you to reach further to insert disks and turn the system on and off than you would with a standard tower.

As for other "ergonomic" considerations, the MTs come with low-radiation Super VGA monitors, a plus in these electromagnetic frequency-conscious times. The mouse is a copy of the pre-Mouseman Logitech, Inc. three-button mouse and uses Logitech drivers. The 101-key keyboard appears to be high quality with a firm key action that I found quite usable. However, none of these features makes the MTs radical standouts in the ergonomic PC market.

That is not to say that the MTs should not be considered for power-user desktops or even low-end server operations. The test machine felt consistently snappy, and the speed of the local-bus accelerated video was apparent. One other convenient feature was the MTs' use of a key-locked sliding panel on each side of the case, which allowed easy access to all components, slots and drive bays. This arrangement is superior to many desktop systems that require the entire housing to be removed.

One caveat: This feature caused my most serious problem with the system. The panel on the side that allows access to the motherboard was jammed on arrival, and it took several minutes of judicious prying, prodding and tapping before I could remove it. I was not able to determine the exact cause of the jam, but several of the spring clips that help guide the panel into place had come unattached and were dangling when I first opened the system.

In all, however, the MT systems are well-built, price-competitive PCs that are certainly worth consideration for high-end desktops. But if you're looking for anything even remotely radical in the way of ergonomics, you'll have to look elsewhere.

The MT series of PCs ranges in price from $2,349 for a 486DX 33-MHz model to $2,799 for a 486DX2 66-MHz model.

Multimedia databases

Network makes movie debut

Everlink on-line multimedia database eases preproduction headaches

By Matthew Mandell

Computers are invading a new aspect of filmmaking. Long before the cameras roll, countless hours are spent location hunting, budgeting and casting during the purgatory known as preproduction. But no longer must this be the bane of a producer's existence.

Enter Everlink, the newest of two on-line multimedia database networks designed for the entertainment industry. Using Informix Software, Inc.'s Informix relational database system in combination with the Natural language user interface, "anyone with a Mac or PC-compatible can access our system," said Howard Gollomp, chief executive officer and co-founder New York-based Everlink.

Conceived four years ago by Gollomp and partner John Kelly, a former *Saturday Night Live* producer, Everlink came on-line in October, and it has been making a stir in the industry. Companies such as Ron Howard's Imagine, Francis Ford Coppola's American Zoetrope and Rob Reiner's Castle Rock have all beta tested the system.

Smaller production companies and independents are also being targeted.

"We studied many architectures and systems," Kelly said, "and decided on Unix for its openness." Set up on a Sequent Computer Systems, Inc. S2000/200 with 128M bytes of random-access memory, 5.6G bytes of mass memory and four Intel Corp. 1486 multiprocessing CPUs running in parallel, Everlink is poised for the future. Using Infonet, anyone who has paid a onetime $199 fee can make a local call and access the database for $1 a minute.

"Our only problem," Gollomp said, "is the 'chicken or the egg' syndrome. People don't want to sign up until more people are on-line. As more professionals sign up, the database will become more robust and useful," with members being able to list their credits and abilities on the system for a small fee.

> "Everlink's potential is tremendous. They just have to get more people signed up . . ."
>
> —*Jack Freedman, producer*

Peter Giuliano, first assistant director for such movies as *Avalon* and *Bugsy*, used Everlink extensively for Barry Levinson's *Toys*. "Everlink is a powerful tool, and once the phone company puts in optical lines, Everlink's ability to transmit better and quicker graphical information will be a plus. Being on-line and not having to wait for a fax back on information requested is quick, private and convenient," Giuliano said.

"Everlink's potential is tremendous. They just have to get more people signed up and the data entered," said Jack Freedman, producer of *Body Parts*, *Toy Soldiers* and *Mother's Boys*. "I have 12 different directories [cinematographers, production managers, art directors, etc.] on my shelf, which are essentially out of date when I get them. Everlink will keep the data up-to-date including resumes, which the directories don't include."

Rapid search

There are 145,000 commercial productions — film, television, industrial — researched worldwide every year, according to Everlink founder Howard Gollomp. For $1 per minute and using the Natural language interface, a producer can search for specific information such as the name of a blond actress who speaks French or a sound stage's schematic in Arizona.

"Everlink seems to save so much lost time in tracking down people such as cinematographers by just giving you their phone numbers," said Clarisse Perritte at Sharona Productions, an independent production firm in San Francisco.

As the newcomer, Everlink has been aiming at Baseline, which went on-line five years ago. Baseline, according to Vice President Linda Brown, has "2,000 users."

Asked if she sees Everlink as a threat, she said, "It all comes down to data, not retrieval. We have archival information, periodicals and current credit information that Everlink does not. They are more into services than we are. Anyway, with their arrival we are getting an increase in media attention. I don't see a problem."

Giuliano added, "The two systems do not do the same thing. Baseline will give you grosses on productions and credits that Everlink doesn't, but that's not the information I need for an upcoming production, such as union information."

Everlink expects to have a graphical user interface ready within a few months. Once it is in place, users will be able to select a parameter for a list of actors, receive their photos on screen, get their biographies and statistics and even manipulate their hair color if desired.

Films and commercials are just the beginning for Everlink. "We intend to extend the service to legitimate theater and even the music industry. Anyone who needs to set up a production or just wants to investigate the industry will be able to use our service," Gollomp said.

Mandell is a New York-based writer/filmmaker.

[redacted]

Utilities

Claris Corp. has started shipping the FileMaker Pro Translator, a utility.

According to the company, the product enables users of Symantec Corp.'s DOS-based Q&A 4.0 database program to transfer their database to FileMaker Pro 2.0 for Windows.

Replicating the Q&A 4.0 fields, forms and data, FileMaker Pro Translator places them into the files of FileMaker Pro 2.0 for Windows.

The newly created Windows files offer Windows capabilities and are identical to the original Q&A files.

Details of the conversion are documented on a log that the FileMaker Pro Translator composes.

The trade-up and/or retail price for the product is $99.

▶ *Claris*
5201 Patrick Henry Drive
Santa Clara, Calif. 95052
(408) 987-7000

Peripherals

Advanced Retail Technologies, Inc. has introduced the Direct Order Terminal System.

The product consists of an integrated and customized system that includes software and product catalogs. It was designed for the specific needs of each sales organization, the company reported.

Users can scan orders into the system and, with a built-in modem, can transmit the order back to the host. An integrated printer provides a hard-copy record of the order, and the system has a real-time ability to calculate sales demographics and inventory levels.

Prices start at less than $500.

▶ *Advanced Retail Technologies*
540 Madison Ave.
New York, N.Y. 10022
(212) 888-5590

Adobe Systems, Inc. has announced that Apple Computer, Inc. has incorporated Adobe's PostScript software into the Apple LaserWriter Select series of 300 dot/in. midrange laser printers.

LaserWriter Select 300 has a base configuration with 512K bytes of random-access memory expandable to 4.5M bytes.

It was designed for users with machines that can be upgraded to Adobe's PostScript software, according to the company.

LaserWriter Select 300 has a base price of $819, with the PostScript software option costing $349.

▶ *Adobe Systems*
1585 Charleston Road
Mountain View, Calif. 94039
(415) 961-4400

Product shorts

DataEase International, Inc. is shipping Version 1.1 of DataEase Express for Windows, which features improved access to SQL engines and interoperability with DataEase 4.53 for DOS. Cost: $395. DataEase, Trumbull, Conn., (203) 374-8000.... **Iris Graphics, Inc.** has released SmartJet Tools, a set of two printing utilities that provide direct output to an iris SmartJet printer from an Apple Computer, Inc. Macintosh. Cost: $500. Iris Graphics, Bedford, Mass., (617) 275-8777.

Modular Software Systems has introduced Bootcon 2.0, a boot-time configuration utility designed to be easier to use than its predecessor. Cost: $79. Modular Software Systems, Kent, Wash., (206) 631-5781.... **XTree Co.** has introduced Version 1.5 of XTree for Windows, a file and disk management utility providing the XTree Command Center shell as a replacement or enhancement for the Microsoft Corp. Windows Program Manager. Cost: $99. XTree, San Luis Obispo, Calif., (805) 541-0604.

Horizons Technology, Inc. has announced that additional city map data sets, covering more than 20 metropolitan areas, are available for use with SureMaps, the company's desktop map software. Cost: $49. Horizons Technology, San Diego, Calif., (619) 292-8331.... **Golden Technologies, Inc.** has introduced Sliders & Dials, a spreadsheet subapplication for Microsoft's Excel for Windows. The product is said to simplify and streamline data manipulation in linked charts and worksheets. Cost: $99.95. Golden Technologies, Lake Oswego, Ore., (503) 620-2201.

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Tricord server seeks IS role

ES5000 may fit the bill for some, but it faces tough sell into corporate mind-set

By Kim S. Nash
PLYMOUTH, MINN

■ Tricord Systems, Inc.'s big, expensive new superserver — the PowerFrame ES5000 — is not for everyone. The multiprocessing machine sports up to six CPUs, offers greater networking features and the ability to support hundreds of users, all of which equip the box for enterprise-level computing, observers said.

But the PowerFrame ES5000 is pricey, and, like superserver brethren such as NetFrame Systems, Inc., Tricord faces an uphill climb into the corporate lap, analysts said.

"IS people are reluctant to bring in another vendor, especially a small one like Tricord," said Walter Johnson, senior analyst at New Science Associates, Inc. in Palo Alto, Calif. "They have to prove they have something different from the PC vendors who are trying to grow up into the server world."

The PowerFrame ES5000 is intended to answer the corporate call for mainframe alternatives with improved scalability and security, said Mark Garver, vice president of corporate strategy at Tricord. The machine, which ranges in price from $78,200 to $918,600, offers the following features:

- Up to six CPUs.
- 1G byte of memory.
- 290G bytes of storage.
- Support for The Santa Cruz Operation's SCO Unix; Novell, Inc.'s NetWare and LAN Manager; Banyan Systems, Inc.'s Vines; and Univel, Inc.'s UnixWare.

The range of operating system support is key to Chicago & North Western Transportation Co. (C&NW), a national freight railroad based in Chicago. C&NW already had about 12 Tricord servers in place before it tested a couple of PowerFrame ES5000s. Several existing PowerFrame Model 40s run IBM's OS/2 Version 1.3 and Microsoft Corp.'s SQL Server, an atypical combination that presents "interesting challenges," said Jeff Johnson, network administrator.

The company first installed Tricord systems in November 1990, when it downsized freight billing and accounts receivable applications from an IBM 3090 mainframe to a group of Tricord Model 40s. Although the superservers still access 3090-housed data, the mainframe is now in the background of C&NW's data center, according to Johnson.

At migration time, the company weighed Tricord against Compaq Computer Corp.'s SystemPro servers, Johnson said. Tricord could accommodate C&NW's more than 17G bytes of data — 36 months of customer history, combined with $3 million worth of bill processing per day, he explained. "And back then, Compaq wasn't giving us any information about enhancement plans." But, he added, Compaq boxes were not passed over completely. Several SystemPros act as servers for small NetWare local-area networks.

Tricord tidbits

While the ES5000 server ranges in price from $78,200 to $918,600, beta-test users spent an average of $98,700 for each test system.

Tricord recently filed for an initial public offering (IPO) of 3 million shares priced between $10 and $12. NetFrame and Parallan Computer, Inc. also recently filed for IPOs.

Now, plans to upgrade the Model 40s to a bigger ES5000 stem from an ever-growing user base on C&NW's mission-critical freight application. Plus, the firm wants to go to NetWare 4.0 from NetWare v3.11 and upgrade to OS/2 2.0. "You cannot — just cannot — do all that with simple PCs," Johnson said.

Industrial Towel and Uniform, Inc. agreed but claimed that a big, expensive enterprise-level server is not necessarily needed. The New Berlin, Wis.-based firm has opted to expand a Tricord-based network using more efficient storage techniques rather than spend "a lot more money on new boxes," said Steve Knauf, chief information officer.

Knauf said he plans to upgrade from a 33-MHz to a 66-MHz system but will get the bulk of a processing boost from a redundant arrays of inexpensive disks (RAID) device.

Tricord, *page 50*

Visualization system aids brain surgery

By Maryfran Johnson
STANFORD, CALIF

Brain surgery never looked so easy — to the average layman, that is.

But what Dr. John Adler set out to do with the Neurosurgical Operating Arm System — a workstation-based visualization tool — was to enable his fellow neurosurgeons to peer deep into the brains of their patients during surgery.

"The whole thrust of this is to take medical imaging directly into the operating room and do surgery more efficiently and safely," said Adler, an assistant professor at the neurosurgery department of Stanford University Medical Center. It is the first such system to put interactive image processing into a surgeon's hands while he is operating on a patient.

The system is based on a Silicon Graphics, Inc. Unix workstation, Stanford's own customized graphics software and a specially constructed operating "arm" designed by another neurosurgeon and Radionics, Inc. in Burlington, Mass. The data loaded into system memory comes from CT, or CAT, scans of the patient's skull, allowing the surgeon to call up three-dimensional "slices," or views of the brain's interior, on the workstation screen.

"The surgeon can basically ask the computer: 'Where am I now?' That enables us to work through a smaller opening [in the skull] and do more radical and complete removal of tumors," Adler explained.

The system will be one of the featured topics this month at a meeting of the American Association of Neurologic Surgeons in Boston.

This leading-edge surgical aid is still in the prototype stage, awaiting approval by the U.S. Food and Drug Administration. So far, it has been used in more than 60 operations at Stanford and the George Washington University Medical Center. When it is eventually offered for commercial sale by RSA, Inc. in Brookline, Mass., it will be priced in the $150,000 range.

System *allows surgeons to view 3-D images of the brain's interior during an operation*

"This is a tool designed by surgeons for surgeons," Adler emphasized. "We've been real sticklers about making this as moronically simple to use as possible."

The traditional approach to brain surgery involves the doctor's examining X-rays and CT scans of the patient's head, which during the operation is secured in a large metal frame that screws into the skull. Once an operation is under way, the surgeon must work around the cumbersome mechanical frame, relying on his mind's eye view of the tumor's exact location.

By employing the graphical and processing power of the workstation, the operating arm system "essentially takes the spatial guesswork out of neurosurgery," Adler noted. "The beauty of this is that it also does away with the mechanical frame."

Brain tools

"Computers haven't really been very helpful to doctors yet, in actually doing their jobs," said Dr. John Adler, a neurosurgeon at Stanford University Medical Center. "Anyone can make a complex tool that no one wants to use. But we're trying to do this with no engineers in sight."

By using the system during an operation, the surgeon can call up interior 3-D images of the patient's brain by touching the probe end of the operating arm to certain places on the patient's head. Then, by pressing a foot pedal attached to the system, the doctor can navigate through the menu, examining other images as needed.

Each 3-D image eats up about one-half a megabyte of data, which must appear on-screen instantly.

"One of the technical challenges in developing this system was rendering up to 30M bytes of data in a heartbeat," said Paul Hemler, a research associate at Stanford who helped develop the software. "It took us about nine months to develop fast rendering techniques."

Using standard "brute force" rendering would require up to 30 seconds to process 20M to 30M bytes of data, Hemler explained. To streamline that process, the Stanford team wrote an algorithm that figures out exactly which voxels (3-D versions of pixels or picture elements) will be displayed in the surgical views.

Another challenge still facing the researchers is figuring out how to use magnetic resonance imaging (MRI) data in the operating arm system. "MRI images make pretty pictures, but they're not geometrically corrected, so they don't translate well into real space," Hemler said. "We're trying to understand the causes of the distortion now and correct for them, but it's a hard problem."

Retail

Windows, LANs meet up

By Elizabeth Heichler
COLOGNE, GERMANY

When Germany's second-largest retail firm first envisioned an in-house network that would link everyone in the company and put information at their fingertips, it embarked on a path that seven years later has resulted in a customized desktop environment that pushes the frontiers of technical innovation.

Kaufhof Holding AG operates 249 large department stores throughout Germany, with 42,000 employees and annual sales of more than $1.1 billion. Its current information systems infrastructure, largely the brainchild of chief information officer Ralf-Rainer West, is the result of early implementation of what have become today's key technical trends, including downsizing to client/server systems using Intel Corp. microprocessor-based hardware, high-speed local-area networks and a Microsoft Corp. Windows-based graphical user interface.

In the process, West has groomed a mainframe-oriented IS staff with the help of Microsoft Consulting Services Germany, a team of crack programmers skilled in graphical interface and client/server design.

That Windows-based desktop, extensively customized for 3,000 users on the network, is the keystone of Kaufhof's IS philosophy.

"We want to make everything available to people — and understandable. That's why we chose the Windows graphical environment and created our own applications," West said. He added that the most important nontechnical issue was how to motivate users to take advantage of the tools at their fingertips.

Kaufhof built its own desktop manager on Windows because West said that even today, no commercial desktop managers are really comfortable for end users.

When users sign on, the Kaufhof network shows in color a nearly full-screen, three-dimensional picture of an office with a man sitting at a desk fitted with items such as a printer, calculator, pen and paper, filing cabinets and telephone. Clicking on these pictures launches applications such as word processing and electronic mail.

A whiteboard image is used to launch a variety of corporate and external information services. For example, users can open a window showing pages of video-text with continuously updated news or weather reports, or they can access the German on-line service BTX for air and train schedules.

The possibilities for bringing information to users via the desktop are almost endless, according to West. For example, the company's internal magazine is now available via the network and is no longer limited to a given number of pages or any particular frequency — whenever the group responsible for the magazine is ready with another page or piece of information, it notifies users via a flag on their mailbox.

In the future, West's focus will be on multimedia. For example, he is exploring the use of video for distributing information. "If I have a memo that's 20 pages long, no one will read it. But if we make a five-minute video spot and put it up on the server, people will watch it," he said.

One innovative function that will soon be brought on-line is Windows-based telephony. Kaufhof's goal here is to control its telephone system from the Windows desktop. Just as users can click on calculator icons, they will soon be able to click on a telephone icon to place calls.

The benefits are increased productivity, West said. "We have found out that 15% of a day is wasted trying to get hold of people on the phone." A dedicated telephony server will connect Kaufhof's Novell, Inc. LAN gateway to its Siemens Hicom Integrated Services Digital Network private-branch exchange.

Two important client/server database applications that are helping purchasing executives with analysis and decision-making can be reached via the desktop by clicking on a wall chart pictured in the desktop "office." Both query applications were written in Microsoft's Visual Basic, use SQL databases ranging from 2G to 6G bytes and contain information that is regularly downloaded from IBM DB2 on the company's IBM mainframe.

West credits Microsoft Consulting Services with being a "mother" to Kaufhof's Visual Basic projects. Now, he said, his programmers — roughly 100 of the 380 IS staff members — are so advanced in using Visual Basic that there is little Microsoft can teach them.

Heichler is IDG News Service's European correspondent.

Tricord server

CONTINUED FROM PAGE 49

Tricord promises 40% faster access to data with its RAID system, which Knauf said will let him add 12 more users to the network with no degradation in processing time.

In general, superservers are becoming more attractive as their networking features grow, users and analysts said. For example, improvements in switching and hub technology helped make possible a $3.1 million mainframe downsizing project at American General Life Insurance. The Syracuse, N.Y.-based firm has been testing two ES5000s since last November. The firm moved 13 million 100-byte records off an IBM 3090 mainframe and System/36 minicomputer to a client/server setup of two ES5000s, one older PowerFrame Model 30 and about 150 PCs from Dell Computer Corp.

American General weighed "several" server alternatives, but "with that kind of volume, PowerFrame was clearly it for us," said Gerald Osborne, vice president of administration.

Osborne declined to specify which other vendors be evaluated. He added, however, that the project would not have been a success if Ethernet switches and hubs had not improved in recent years to be able to direct and keep moving the intensive I/O requests the server put forth — no matter which brand of server was implemented.

American General expects to save $14.3 million during the next decade by cutting the costs of maintaining proprietary mainframe software and reducing IS staff. "The combined power of servers and networking equipment is the future here," Osborne said.

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Versant claims easy-to-use OBDMS

By Melinda-Carol Ballou

Versant Object Technology Corp. shipped a new version of the company's Versant Object Database Management System (ODBMS) earlier this month with support for large databases, new administration utilities and other facilities.

These features were designed to make the database easier to tune and maintain while extending its object-oriented capabilities, company officials said.

To ease administration of the database, ODBMS Version 2.0 offers a set of graphical utilities, an automatic self-tuning system and full on-line Help.

One of the most significant features to the release is the graphical administration tools, according to Versant.

"A big impediment to using object databases is administration — people don't want to move to an object database if it means increased headaches in terms of maintenance. They want the same easy-to-use tools that RDBMSs have, and up until now, they haven't had those," said Matt Miller, Versant's director of corporate marketing.

An object archival system gives support for very large databases that was previously not available. With this system, data that is not frequently accessed can be stored on tape, optical disc or other media and archived off-line.

When an application seeks to access the archived data, a message is generated to enable users to mount the appropriate device. This allows off-line data to be maintained without consuming more expensive on-line resources, officials said.

Users upbeat

Users spoke positively about the advantages of larger database support and easier administration via the new tools.

Mark Woyna, section manager at Argonne National Laboratories in Argonne, Ill., has one application that involves the use of large image objects of approximately 170M bytes each. He currently has about half a gigabyte of this data — or three of these images — but said he expects to eventually have 50 images or more.

"The ability to scale up in an unlimited way [in terms of archiving data off-line] is very important to us," Woyna said. "We have several other projects looming in the horizon with initial sets of 10G bytes scalable up to 10T bytes of data or more."

He added that "ODBMS is DBA-intensive, and the graphical tools will help us to manage things."

Version 2.0 of ODBMS also supports nested transactions, superclass schema evolution, new tutorials, a serial number generator and better performance.

"We need nested transactions to be able to reuse code as subcomponents of larger transactions," Woyna said.

Versant Release 2.0 is available now on platforms from Sun Microsystems, Inc. and will ship on IBM's RISC System/6000 and Hewlett-Packard Co.'s 700 series during the second quarter. Prices start at $7,500 for development versions of the database.

At a glance

Relational database management system users are beginning to experience problems managing complex data such as images, long text and strings of data, said analyst Richard Finkelstein. However, the hassles of converting to object-oriented databases are likely to deter most companies from making the switch for several years, he added, because many only recently made the leap to relational databases; also, there are no defined standards for accessing and storing data across object-oriented environments. Graphical tools such as Versant's are a necessary preliminary, he said.

Brief

CD-ROM transfers

Meridian Data and Eastman Kodak Co. will market Netscribe 1000, a system that lets users transfer data into ISO9660 CD-ROMs over a network. The partners said the system, which operates on Novell, Inc.'s NetWare and peer-to-peer networks, reduces the cost of a recordable CD system to less than $600 per user in a 25-user network. The system is made up of the graphical user interface-based Netscribe Access software and the Kodak PCD Writer 200 peripheral.

Price cuts

Frame Technology Corp. has unveiled a promotional price reduction on FrameMaker for Sun Microsystems, Inc. and Hewlett-Packard Co. workstations. Under the promotion, the products can be purchased for $595, less than half the original $1,495 retail price. The offer will continue until June 30.

Locus layers

Locus Computing Corp. is demonstrating its Transparent Network Computing (TNC) layered software technology for massively parallel and clustered systems. Locus, a supplier of distributed computing services, claims TNC is the first portable single-system image software technology in the open systems market.

Tatung touts color

Tatung Science & Technology, Inc. is hawking its Unix-based color workstations in a special promotion that ends May 31 and offers discounts of up to $2,800 on its Super COMPstation 7/30 series. Based on the SuperSPARC microprocessor developed by Sun and manufactured by Texas Instruments, Inc., the Tatung Scalable Processor Architecture system comes with a 19-in. color monitor, 520M-byte hard drive, 32M bytes of random-access memory and an on-board GX graphics accelerator for $13,490.

APC unveils power supply

American Power Conversion Corp. (APC) has announced an uninterruptible power supply (UPS) for midrange systems and multiple local-area network servers whose modular design can be configured to support a variety of installations and backup needs, the company said.

Called Matrix, the product consists of different functional units, such as battery backup and a DC-to-AC inverter, in separate modules. This enables users to add redundancy incrementally and to pinpoint incipient component failures more easily, APC said.

Both battery backup and inverter units provide notification of incipient failures both on the front of each unit and as an alert sent to a Simple Network Management Protocol management system, APC said.

The modular design also enables the user to swap out the defective "block" without having to bring the whole system down, an APC spokesman said.

The block can then be sent to the vendor via overnight courier, fixed and returned without any downtime, he added.

When the inverter fails, cutting off normal power from a utility, Matrix is said to automatically switch over to the backup battery.

A new inverter unit can be hot-swapped by the user in five seconds so there is no interruption in power, the APC spokesman said. Typically, the UPS unit must be shipped to the vendor for repairs, which can take about a week, he added.

Matrix can support up to 99 battery units, so the unit can run up to two days without power, APC said.

The unit can also be programmed to manage file server shutdowns during a power outage so that, for example, a key application such as electronic mail is saved before the system goes down, the spokesman said.

Matrix is expected to ship in the second quarter.

The 3,000 VA version is priced at $3,499; the 5,000 VA version is $5,199.

▶ *American Power*
132 Fairgrounds Road
West Kingston, R.I. 02892
(401) 789-5735

Applications

EcoSystems Software, Inc. has started shipping Version 1.1 of EcoTools, client/server systems management software.

According to the company, EcoTools is the first product to allow users to monitor and manage all of their computing resources from a centralized, graphically based management console.

EcoTools has an assortment of features including console management, security management and job/process monitoring.

Users can perform automated operations, configuration management, capacity planning, management reporting and fault and performance management.

Oracle Corp.'s Oracle Version 6, Oracle 7 and Oracle Applications and Network File System monitoring management support is also provided.

Prices start at $16,000.

▶ *EcoSystems Software*
Suite 201
10055 Miller Ave.
Cupertino, Calif. 95014
(408) 252-3801

Epoch Systems, Inc. has announced that its EpochBackup software is now available on SunSoft, Inc.'s Solaris 2.0 and 2.1 operating systems.

According to the company, EpochBackup is the first product to bring mainframe-class automated backup capabilities to Unix network environments.

Files that are located on heterogeneous Unix workstations and servers are backed up and restored automatically to a designated server.

Sun client licenses start at $90 per client.

▶ *Epoch Systems*
8 Technology Drive
Westboro, Mass. 01581
(508) 836-4300

Storage

Alphatronix, Inc. has introduced the 10G-byte and 20G-byte Inspire II jukeboxes.

The products were designed for Unix platforms and for users whose future needs include a migration path to larger jukebox storage.

According to the company, the 10G-byte jukebox has a footprint of less than 2 sq ft and offers the benefits of robotic jukebox retrieval.

The jukeboxes include the Inspire high-speed optical drives that have digital servos for maximum speeds and an ultra-lightweight split head design.

Alphaguard, a data integrity feature that double-checks each data bit every time it is written to or read from the disk, is also included.

The jukeboxes are available for the IBM RISC System/6000 and Sun Microsystems, Inc., Digital Equipment Corp. and Apple Computer, Inc. systems.

Prices begin at $14,900.

▶ *Alphatronix*
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LOTUS cc:MAIL
Awards (1992-1993)

ComputerWorld I/S Brand Preference Winner, February 1992

•

Windows Magazine WinAward, February 1992

•

LAN Times Reader's Choice, March 1992, January 1993

•

InfoWorld Product of the Year, March 1992

•

BYTE Magazine Reader's Choice, June 1992

•

BYTE Magazine Award for Cross-platform E-Mail, March 1993

•

Network Computing's Certified Interoperable Application Award, December 1992

•

Network World's Enterprise Technology Award, December 1992

•

Software Digest's Highest Overall Evaluation, 8.7 Rating, 1992

•

MacUser Editors' Choice Award, 1992

•

MacWEEK 1992 Editors' Choice Diamond Award, December 1992

•

UNIX World's Best Product of the Year for 1992, January 1993

MICROSOFT MAIL
Awards (1992-1993)

PC Magazine Editor's Choice Award October 27, 1992

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Enterprise Networking

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Elisabeth Horwitt

Is cooperation at hand?

Some of us have grown cynical about vendor-driven standards efforts since those wide-eyed days when OSI was going to be the single, ultimate networking standard.

We've seen the battle of the proprietary networking protocols segue into the War of Openness, where everyone was supporting several standards, and no two vendors' implementations could talk to each other.

What's going on now is different. Potentially, it's exactly what users have been waiting for.

In the old era, standards bodies such as the ISO could never seem to work through the bu-

Horwitt, *page 56*

Reservation systems

Sabre wireless applauded

By Lynda Radosevich

A number of travel agency information managers said they are enthusiastic about American Airlines' recent announcement of a wireless local-area network option for its massive Sabre Travel Information Network reservation system.

However, some expressed concerns ranging from uncertainty about wireless LAN technology's maturity to questions about American Airlines' priorities for the Sabre network.

The wireless choice will let Sabre subscribers use its reservation equipment in hard-to-cable places such as temporary sites and trade show demonstrations, Sabre said.

networks

Wanting wireless

That is a capability that Dick LeFave, vice president and chief information officer at Thomas Cook Travel's corporate headquarters in Cambridge, Mass., said would be ideal for use in trade shows — once wireless technology is proven to be reliable.

"In a trade show, you have critical need to have performance. Telling people that the system is down doesn't work when you are trying to sell to someone," LeFave said. "I don't have a burning need right now, but we are interested in the technology," he added.

For a onetime charge of $250 per card, Sabre will install and lease to customers NCR Corp.'s WaveLan wireless network adapter cards. The wireless network requires one card for a server station and one card for each end node, and it can transmit as far as 400 feet in an open space using spread-spectrum wireless technology.

NCR's list price for the same equipment starts at $790 per card.

"The pricing is reasonable and it certainly would cut down cabling costs when moving CRTs from one place to another," said Christine Sikes, director of MIS/accounting at McGregor Travel, Inc. in Stamford, Conn. "We have many locations across the states, and it would fit beautifully at our smaller sites where the transmission speeds would be sufficient."

Some users raised concerns about the increased possibility of interference and data transfer rates that are much

Sabre, *page 58*

It pays to dial up router savings

By Joanie M. Wexler
SAN FRANCISCO

When Fritz Cos. got into the business last fall of tracking shipments for companies purchasing goods from around the world, the $142 million service provider moved off a modem-based backup communications network to one constructed of dial-up routers.

The goal was simple: to save serious chunks of change on the company's global phone bill, said Richard Stern, manager of enterprise networking. The savings were to come largely from equipment that maintains dial network connections — which automatically kick in when a leg of the firm's worldwide leased-line network fails — only while traffic is being transmitted, he said.

Fritz is hitting its savings mark to the tune of up to a 70% monthly drop in network usage charges. Prior to the new network, Fritz was spending about $36,000 in overall monthly network fees.

The savings is due in part to Cisco Systems, Inc.'s latest software release for its routers, Stern said. Version 9.0, delivered last fall, has a cash-conserving "dial-on-demand" feature that minimizes network connection time. Fritz, which did not previously operate a router network, chose Cisco because "it was the only router vendor with this feature," Stern said.

Fritz's primary line of business is in import/export customs brokerage: Companies shipping goods across country borders "outsource" the complicated administrative task of getting items cleared by customs to a company such as Fritz.

Fritz expanded its business in November to include logistics services for companies such as retail stores purchasing goods from overseas, which need just-in-time information to plan inventory loads, pricing and sales events, Stern said.

Follow-through

To that end, Fritz established a dedicated or dial-up communications link with its customers, which forward Fritz a copy of all their purchase orders electronically. Fritz then appoints a representative in the manufacturer's (seller's) region to take charge of a customer's purchase order and stay on top of information such as its whereabouts, how much of it is in stock and whether the order was subcontracted to another manufacturer.

"Previously, companies just ordered items like clothing, and they showed up whenever they showed up," Stern said.

ON SITE

Fritz Cos.
San Francisco

Business goal: To save money on the global tracking service provider's telecommunications bill, an endeavor with big-dollar potential because the firm's business hinges on network-based service.

Technology: Cisco CGS and 4000 dial-up routers, Hewlett-Packard HP 9000 workstations, Oracle interactive databases.

Results: As much as a 70% monthly decrease in phone bill; network response time improved two- to threefold; equipment savings in modems and router ports.

The account representative keeps this data active in the Fritz internetwork of service sites, which consists of Hewlett-Packard Co. HP 9000 workstations running Oracle Corp. interactive databases and Cisco dial-up routers. Customers, whether at the office or on the road with a laptop, can log onto the Fritz network and find out the status of their shipments.

To sustain the business, Fritz needs "reliable communications over sometimes unfriendly communications environments. That primary line will go down. You can't control a guy on a back hoe [breaking a cable] in Texas," Stern acknowledged.

With Cisco's Release 9.0, the routers not only automatically switch traffic from a leased-line network to a dial-up connection, but they also disconnect when no traffic is flowing and establish a new connection only when traffic arrives. Previously, Cisco (and other dial-up routers) established and maintained a single connection until the leased-line link was re-established.

In that scenario, users paid for the connection whether or not any data was being transmitted, much as an individual would ring up a big phone bill if the parties at both ends of a toll call fell asleep for several hours and did no talking.

Meanwhile, Fritz, which previously used 9.6K bit/sec. modems and the communications capabilities embedded in the HP 9000 Unix-based workstation, discovered that response time "is at least two to three times faster," Stern said. He explained that this is because "the communications capabilities in Unix couldn't keep up with the modem."

The payoff

Stern said he expects a 19-month payback on his "six-figure" investment in approximately 20 Cisco CGS and Cisco 4000s, a population of devices he expects to continue growing.

At high traffic hub sites, the company is running a half-dozen Cisco AGS+ routers. Stern decided against the high-end Cisco 7000 "because it doesn't yet offer much in terms of serial connectivity."

In addition, Fritz has discovered equipment savings in modems and expensive central router ports. Phone numbers are now stored in the Version 9.0 software, no longer in the modems.

This means the firm no longer has to dedicate a router port and modem for each site it is communicating with because the modems can dial any number.

"Now, instead of having 10 modems and 10 slots in a main router to talk to 10 sites, I can just use a couple to cover, say, two simultaneous line outages," Stern explained.

NetWare shortcomings addressed

By Michele Dostert

If you want to play with the big boys in corporate computing, you have to play by their rules. Novell, Inc. appears to be taking that maxim to heart; in sessions at its recent Brainshare developers' conference, Novell engineers described development efforts aimed at improving NetWare 4.0's wide-area, local-area network-to-mainframe and messaging efficiency.

NetWare users have long complained that IPX/SPX, Novell's proprietary networking protocol, performs poorly in wide-area networks. While NetWare server software includes a Transmission Control Protocol/Internet Protocol (TCP/IP) stack, it cannot be used to access the NetWare core protocols that are the guts of NetWare without first being tunneled through IPX/SPX.

Managers who use TCP/IP to access remote minicomputers and Unix hosts must load both TCP/IP and IPX/SPX protocol stacks on their client PCs and support both protocols on their cable.

"It would simplify my life considerably if Novell would accept TCP/IP on a par with IPX/SPX, so we only had to run one protocol," said Ron Boeving, assistant vice president of information systems at HealthCare Compare, a Downers Grove, Ill., health management company that runs both protocol stacks on its PCs.

WIDE area network

At a Brainshare session, Novell engineers gave details on the company's long-awaited NetWare/IP product, a set of NetWare Loadable Modules (NLM) and a TCP/IP stack that will give TCP/IP equal access with IPX/SPX to NetWare core protocols, thus eliminating the multiple-protocol headache.

The NLMs will provide TCP/IP host and routing information to the NetWare server and provide a central repository of TCP/IP network information that will compensate for TCP/IP's inability to broadcast that information. Novell has not set a date for the product's announcement.

Robert Davis, Novell's vice president in charge of Unix connectivity, stressed that Novell is not planning to phase out IPX/SPX. "We expect customers will continue to use IPX/SPX for their local traffic; NetWare/IP will just make their wide-area connections easier," he said.

On the mainframe connectivity front, Novell executives promised that its NetWare for SAA product would be revised and re-released to take advantage of NetWare 4.0's directory services. Other promised additions to NetWare for SAA include logical unit to logical unit support, integration with IBM's LAN Network Manager and 1,000-user support. Novell also plans to revise its NetWare Asynchronous Communications Services product to support the NetWare 4.0 directory services.

"Writing applications that use both NetWare and IBM mainframes is currently a real pain," said John Galvin, a software engineer at Swiss Colony, Inc., a mail-order house in Monroe, Wis. "If Novell can make NetWare and SAA easier, it would help us a lot."

On the messaging front, Novell announced plans for a new release of its Global Message Handling Service (MHS), scheduled for release in the third quarter. In the new version, Global MHS will be fully "aware" of the NetWare 4.0 directory services and will include improved security, data storage and wide-area connectivity.

Horwitt

CONTINUED FROM PAGE 55

reaucracy and vendor bickering to deliver a workable networking standard.

Now we have vendors' network engineers getting together in back rooms to come up with a common set of code that ideally will mesh existing network and network management standards with vendors' best value-added features.

Examples of truly open, user-beneficial alliances include several working groups within the Internet Engineering Task Force (IETF), the TCP/IP and SNMP standards body. Founded by Internet networking engineers, IETF has a tradition of developing working networking and network management protocols unhindered by a lot of PR nonsense or vendor dominance games.

At the IETF meeting this month, Cisco started a working group to develop standards for routing IBM's SNA, as well as source-route bridging and NetBIOS, over TCP/IP [CW, April 12].

This effort is quite different from Cisco's other SNA routing protocol initiative, the Advanced Peer-to-Peer Internetworking Forum, which was formed to challenge IBM's dominance of the SNA internetworking arena. This time, Cisco is asking IBM to come in right at the start. Furthermore, Cisco is proposing that the new standard be based on IBM's Data Link Switching protocol. IBM has said it is likely to join, as are most other router vendors whose devices handle SNA. Hats off to Cisco.

Now if only the IETF and the ISO can overcome their differences to work together on a single set of internetworking standards, we'd really get somewhere fast. During the recent IETF meeting, a representative met with Internet's Advisory Board to discuss how this can be done.

The potential benefits to users are obvious: Instead of having two internetworking standards bodies, they'd have one. Potentially, the IETF's TCP/IP would take on some of the best features of OSI, such as X.400 E-mail and X.500 directory services. Indeed, IETF working groups are already hard at work on specifications for putting those OSI applications on top of TCP/IP.

However, there are barriers in the way, the biggest being the vast differences in the cultures of the two organizations.

The Internet board tried to downplay the traditional animosity that IETF engineers feel toward the ISO, which many see as a fuddy-duddy bureaucracy. However, the resistance is definitely still there; a representative from an OSI software vendor complained that he still gets funny looks at informal IETF breakouts.

And IETF members expressed concern that liaisons with the ISO will cost them their consensus-driven, free-flowing standards development process, which involves anyone in the Internet community who wants to propose a new feature or comment on someone else's.

This process has enabled the IETF to come out with working internetworking and network management standards a lot faster than the ISO has. However, it doesn't always work; for example, the IETF has spent more than a year debating how to fix TCP/IP limitations such as an addressing protocol that will shortly run out of addresses.

Indeed, the IETF's very success as a standards body means it has to deal with an increasingly complex and unwieldy set of standards that involve a lot of different vendor and user niches. As one Internet board member pointed out, the ISO does have experience getting various international standards bodies to work together.

Furthermore, the IETF needs that status as an International standards body in order for its protocols, particularly TCP/IP, to gain credibility among commercial, multinational corporations.

Keep talking, guys.

Horwitt is a *Computerworld* senior editor, networking.

In Brief

Sprinting faster

Another chunk of America's information highway got wider recently when **Sprint Corp.** upped the dedicated access speeds of its SprintNet X.25-based global data network. The upgrade's main objective, Sprint executives said, is to rev up the links between corporate hosts and SprintNet so they can better handle the influx of aggregate dial-up traffic from remote users.

Buying it all up

U.S. Robotics, Inc. has acquired 100% of the common stock of P.N.B.SA, a maker of portable PCs and networking products for IBM desktop computers, in Suresnes, France.

Speeding up Ethernet

CNet Technology, Inc. in San Jose, Calif., has begun developing "fast" Ethernet network adapter cards, hubs and routers. The firm said it will ship the interfaces as soon as the IEEE 802.3 committee finishes the 100M bit/sec. Ethernet standard later this year.

Native agreement

Powercore International in Manteno, Ill., and **Isocor** in Los Angeles announced a joint technology agreement that will enable Powercore's Network Scheduler 3 — slated to ship in late 1993 — to operate as a native client over Isocor's suite of X.400 messaging products.

Which switch

Switched digital service access provider **Ascend Communications, Inc.** in Alameda, Calif., has signed marketing agreements with phone switch maker **Northern Telecom, Inc.** and **AT&T**'s network services group. Ascend will develop an ISDN Basic Rate Interface for Northern's Meridian 1 private branch exchanges; AT&T will jointly promote its Switched Digital International Service with Ascend's inverse multiplexers. Inverse multiplexers provide one or more applications with dial-up access into a variety of switched long-distance services.

Token Ring meets X

Token Ring adapter card maker **Olicom USA, Inc.** in Plano, Texas, has partnered with X terminal vendor **Tektronix, Inc.** in Wilsonville, Ore., to render Tektronix's new XP t0T series of X displays Token Ring-ready upon shipping.

Tariff pursued

Bell Atlantic Corp.'s New Jersey Bell operating company recently filed a tariff to provide users with access to Primary Rate (1.5M bit/sec.) Integrated Services Digital Network (ISDN). Most regional Bells to date have offered only Basic Rate (144K bit/sec.) ISDN access. The New Jersey Bell tariff calls for a typical installation fee of $1,500, with monthly recurring charges of approximately $600.

HP offers carrot

Hewlett-Packard Co. recently announced that current customers of **Lexcel, Inc.**'s Lance+ can get a 35% discount if they trade in the local-area network monitoring system for the HP equivalent: OpenView Network Node Manager and OpenView Probe Manager. Users can also trade in **Microsoft Corp.** Excel's LanceTap or **Novell, Inc.**'s LANtern and receive a 35% to 48% discount off the price of HP LANprobe, HP said.

Satellite shopping?

Chicago-based retailer **Montgomery Ward & Co.** has awarded a multimillion-dollar contract for satellite networking equipment and services to **Hughes Network Systems, Inc.** Hughes will install a very small-aperture terminal at each of Montgomery Ward's 350 retail outlets nationwide for such applications as check and credit authorization, inventory management and pricing changes.

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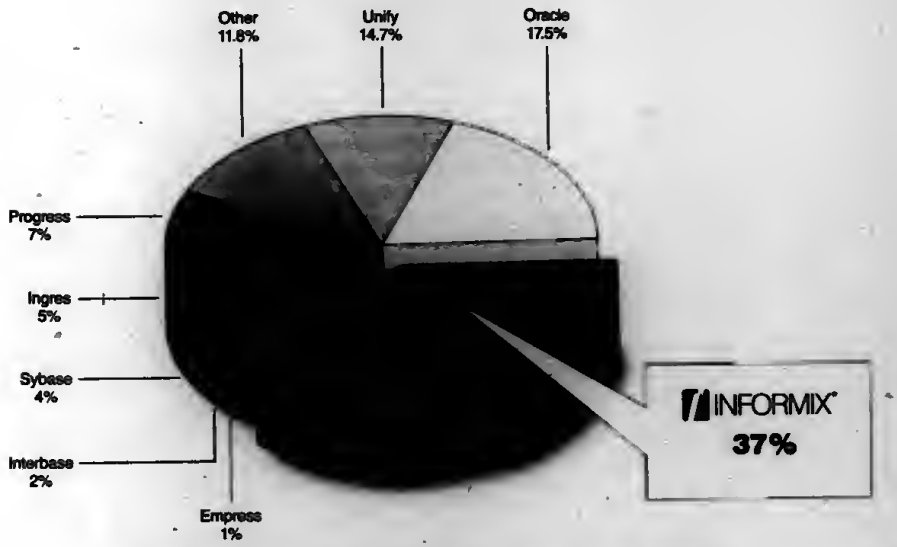

Worldwide UNIX Relational Database Software License Shipments, 1991
Source. International Data Corporation, 1992

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Spread spectrum finding its niche in hard-to-reach places

By Lynda Radosevich
CEDAR RAPIDS, IOWA

Norand Corp. is shipping a new wireless option in its line of wireless data collection and communication hardware and software.

Using spread-spectrum radio transmissions, Norand's new devices and software let manufacturing, delivery, transportation and retail companies collect data from areas unfriendly to cabling, such as plant floors, and pipe the data to host systems.

Currently, Norand's wireless customers, such as Merry-Go-Round Enterprises, Inc., a national clothing retailer in Joppa, Md.; must license a narrow piece of Ultra High Frequency bandwidth from the Federal Communications Commission (FCC). In the new Norand products, as in general, the spread-spectrum bandwidth is licensed to the vendor, and customers do not have to obtain their own FCC licenses to use the frequency. In addition, spread spectrum is said to speed data transmission rates and increase security because it splits transmissions and sends them over a broad frequency range.

Scanning for details

Merry-Go-Round uses wireless handheld devices to scan bar-coded palettes of merchandise and locate the palettes in its 1,070-sq-ft distribution center. The information is sent instantly to 64 radio frequency terminals, from which detailed information about all inventory is available.

While the spread-spectrum option might be interesting in the future, the technology is still new to the commercial world, and problems with it may yet surface, said Alan Loberstein, distribution manager at Merry-Go-Round. The federal government has used spread spectrum since the 1960s.

"We'd rather see those problems flushed out, and then we'll consider it," Loberstein said.

Norand's new line includes a network controller, base transmitter, mobile radio frequency terminal, handheld terminal and a terminal for vehicle mounting. A new capability checks for the fastest transmission route for data traveling between the host computer application and a terminal, keeping response times to less than one second, according to Norand.

The system's software works with host systems, such as IBM's Application System/400 and System 3X family of minicomputers, and Unix and OS/2-based applications with an asynchronous link. In addition, the system can reroute the signal if a network component fails, and the network automatically switches the transmission of a terminal from one base station to another when the mobile terminal roams out of range, according to Norand.

Sabre wireless

CONTINUED FROM PAGE 55

slower than the wired networks.

However, for Dan Bohan, chief operating officer at Omega World Travel's headquarters in Fairfax, Va., the question is not whether Sabre's wireless network is stable. He is concerned that Sabre is offering new technology options instead of attacking more important deficiencies.

"I can think of 100 enhancements to Sabre that would be better than this," Bohan said. For instance, reservation agents cannot see schedules and fares on one screen at the same time. All information is presented in uppercase letters with no punctuation, and the communications software is limited to the system's 7-bit network, which limits programming options, he said.

Sabre is installing wireless LANs for customers in the U.S. now and will begin installing wireless LANs for customers in Europe, Japan, Australia, Latin America and the Caribbean by the end of 1993.

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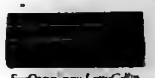

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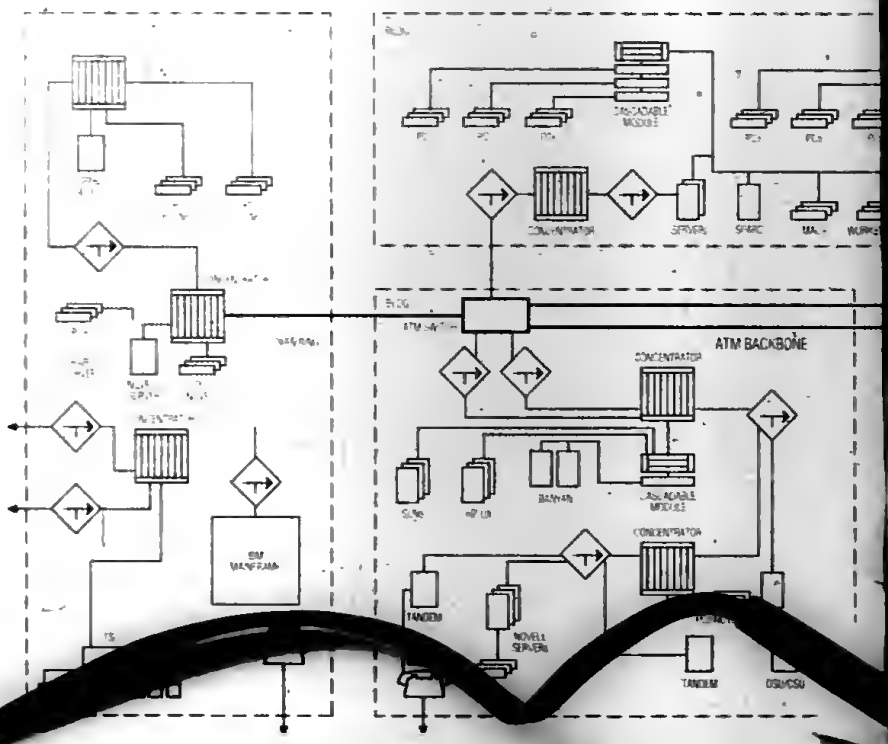

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Tools monitor host/LAN response time

By Elisabeth Horwitt
MINNEAPOLIS

BlueLine Software, Inc. has extended its IBM VTAM performance monitoring tools to monitor response time on links between LAN clients and an IBM host.

BlueLine's Vital Signs for LANs is said to identify bottlenecks and response time problems across links between Novell, Inc. NetWare local-area networks and IBM mainframes. Software running on a dedicated DOS PC monitors traffic on the LAN portion of the link, sending alerts up to BlueLine's host-based Vital Signs for VTAM software. Vital Signs for VTAM can monitor traffic levels all the way down to a LAN gateway that emulates an IBM 3174 cluster controller, a company spokesman said.

Together, the two software modules provide centralized network control centers with information such as application use levels, file server activity, user activity and Novell IPX/SPX traffic on LANs, BlueLine said. Vital Signs for VTAM includes a database for storing traffic and usage information, as well as applications for generating reports.

Vital Signs for LANs targets companies that want a way to monitor LAN-to-host links, as well as overall LAN traffic, without installing a LAN monitoring system and LAN administrator at each LAN site, the BlueLine spokesman said. The system currently supports Novell NetWare LANs on Ethernet or Token Ring and IBM 3270-based LAN-to-host links. Future releases of the product will support LAN-to-host connections based on IBM's Advanced Peer-to-Peer Networking and LU6.2 protocols, as well as Transmission Control Protocol/Internet Protocol, BlueLine said.

Vital Signs for VTAM is priced between $10,000 and $50,000, depending on mainframe CPU class. Vital Signs for LANs prices start at $7,500. DOS 5.0 or above or Microsoft Corp.'s Windows 3.1 or above is required.

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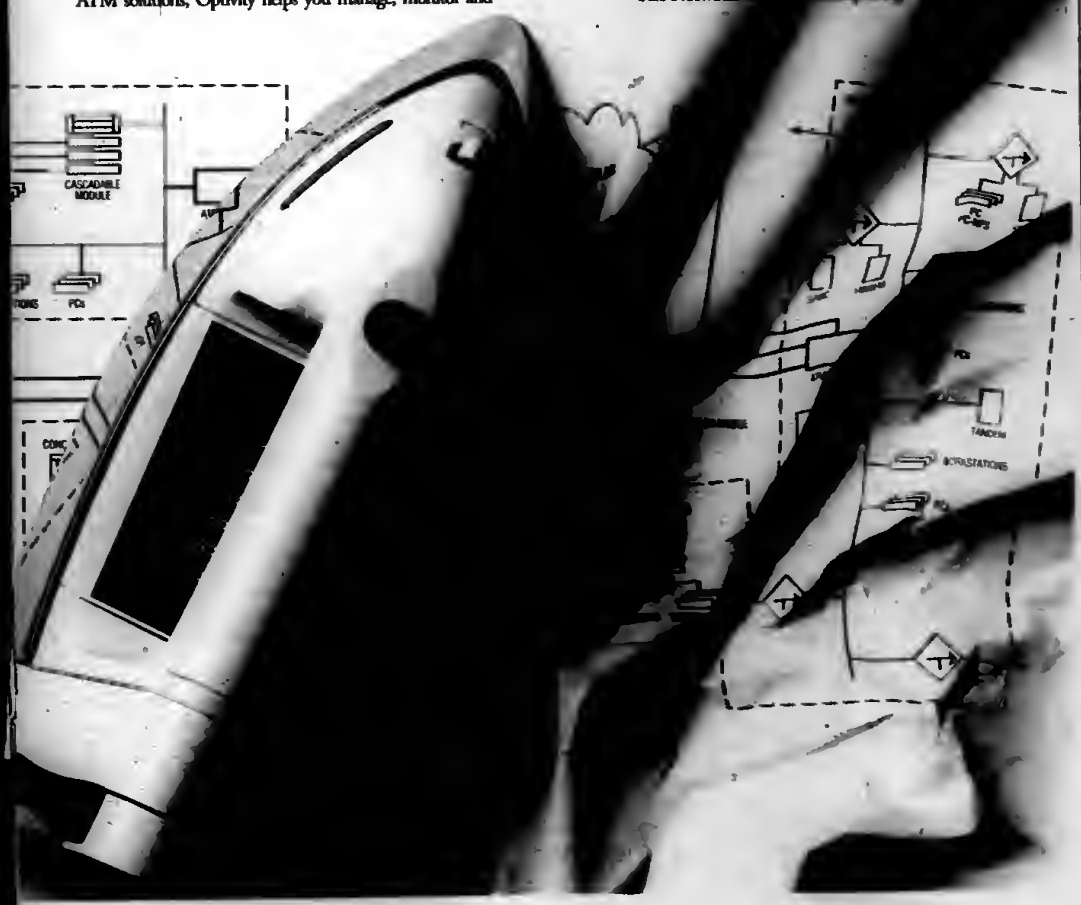

3Com enhances router line

3Com Corp. has enhanced its mainstream router line with support for the 3Com remote site-oriented Boundary Routing Architecture, which offloads most of a remote device's complexity to a central router for easier remote site management.

Supporting the neophyte Boundary Routing across the 3Com line means that higher end 3Com routers can now function as central router "hubs" in the Boundary Routing design scheme. That topology requires Boundary Routing remote nodes to feed directly into a central router, creating "star clusters" of devices and precluding a mesh network topology.

3Com has also added data compression, X.25 gateway and other capabilities to the router line. It has also begun shipping its LinkBuilder Multi-Services Hub, which it announced last October, priced at $180 per port and up.

In addition, the company recently rolled out three Ethernet cards that use its high-performance parallel tasking technology. Shipping now are a $225, 16-bit adapter for XT/AT-bus PCs with three standard media connectors; a $349, 32-bit adapter for Extended Industry Standard Architecture-based PCs; and a $349, 16/32-bit adapter for PCs with the IBM Micro Channel Architecture bus.

—Joanie M. Wexler

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Systems Network Architecture

Rabbit Software Corp. has introduced Version 5.3 of Open Advantage Unix for Novell, Inc.'s NetWare for SAA.

The product provides Systems Network Architecture (SNA) emulation for Unix users who want to use Novell, Inc. NetWare for SAA. Access to multiple hosts via multiple NetWare for SAA servers is available, and the product has the ability to use both network connections and Unix Transmission Control Protocol/Internet Protocol communications.

Features include automated file transfers, High-Level Language Application Program Interface, hot-keying between 3270 sessions and printer support.

Prices range from $495 for a single-user version to $2,500 for support of up to 254 SNA sessions.

▶*Rabbit Software*
7 Great Valley Pkwy. East
Malvern, Pa. 19355
(215) 647-0440

Network management

Equinox Systems, Inc. has introduced Equiview, a network management tool for the firm's ELS Terminal Server line.

The product is a Microsoft Corp. Windows-based application that enables Equinox terminal servers to be configured and managed quickly and easily, according to the company.

A graphical interface is provided that offers pull-down menus and selection boxes to set all parameters. The product also has the ability to save the configuration on a disk.

Equiview is included with ELS Terminal Servers. Prices for the terminal servers range from $1,895 to $5,400.

▶*Equinox Systems*
6851 W. Sunrise Blvd.
Fort Lauderdale, Fla. 33313
(305) 255-3500

Security Dynamics, Inc. has announced the ACE/Server for OS/400, an integrated software security server.

The product centrally manages and administers user access to network resources through remote dial-up, direct connection or gateway. The ACE/Server for OS/400 uses two-factor authentication, providing access to authorized users and blocking out would-be trespassers. The product's software monitors every network attempt and never exposes passwords on the network.

Prices start at $2,000.

▶*Security Dynamics*
1 Alewife Center
Cambridge, Mass. 02140
(617) 547-7820

Empirical Tools & Technologies, Inc. has introduced Dr. Watson, the Network Detective's Assistant, a network analysis tool.

Dr. Watson comprises two software modules that can be loaded on any PC or notebook equipped with an Ethernet adapter. The modules assist users with installation and maintenance of multiplatform computer networks.

The Detective module is a network surveying package that can be configured to maintain an accurate, real-time portrait of each network node. Users can examine the network to find out where each node resides, how it can be reached and how it responds to standardized queries with the second module, Detective's Toolbox.

The product costs $995.

▶*Empirical Tools & Technologies*
517C Mission St.
Santa Cruz, Calif. 95060
(408) 427-5280

Desk Talk Systems, Inc. has announced Trendsystem, a network management system that collects and uses all network data. The product provides enterprise-wide network management capabilities that support data collection from multiple management applications, the company reported.

The product, a SunConnect SunNet Manager-based application, is composed of seven software components: Trendbase, Trendgate, Trendstart, Trendview, Trendanalyzer, Trendstart and Trendlink.

Prices begin at $2,750.

▶*Desk Talk Systems*
19401 S. Vermont Ave.
Torrance, Calif. 90502
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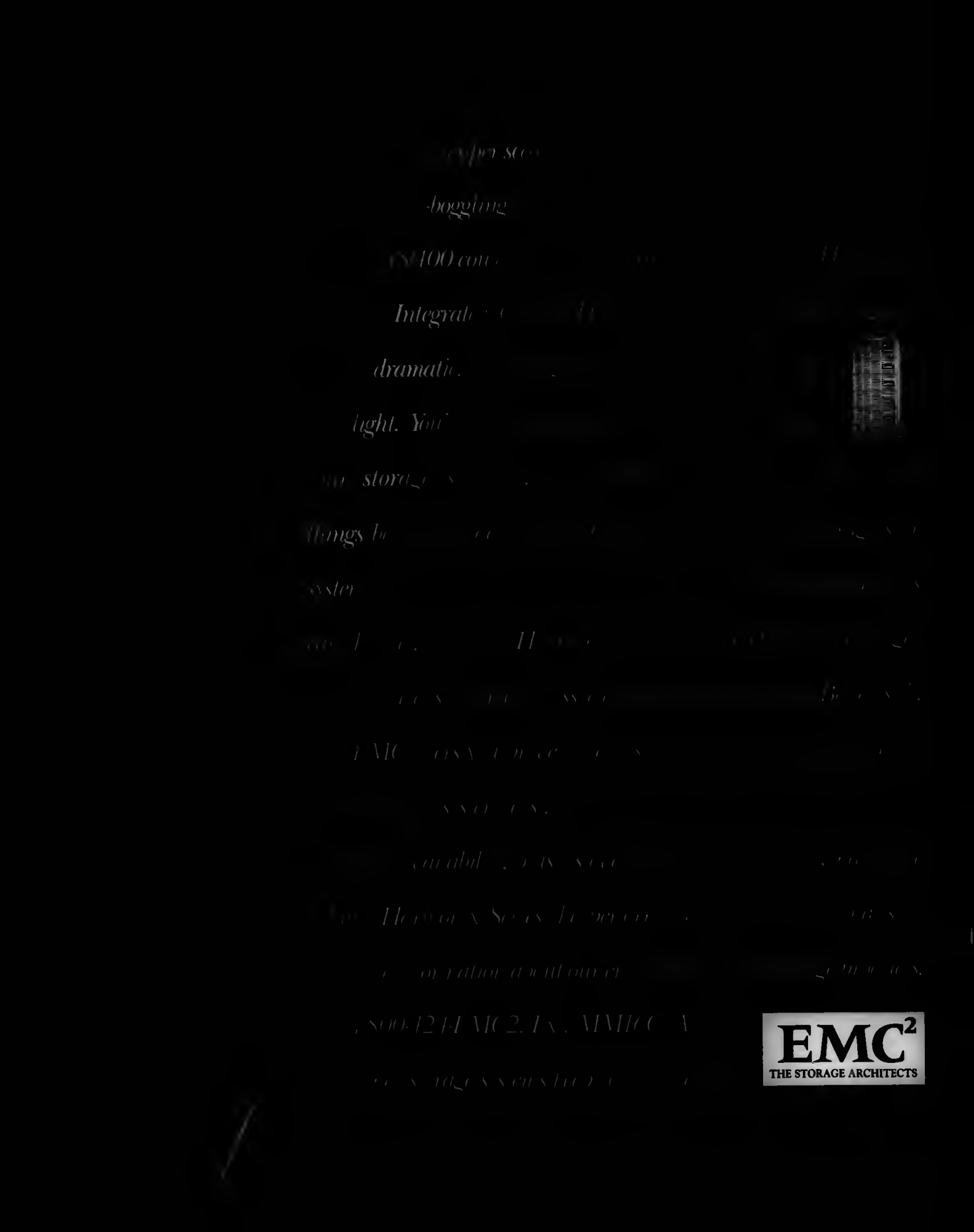
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THE STORAGE ARCHITECTS

Keeping track of software

By Thomas Hoffman

Like many multinational user firms, Joseph E. Seagrams & Sons, Inc. is trying to leverage its technology assets on a global basis. The New York arm of The Seagram Co. in Montreal has 32 primary information systems centers that support operations in 150 countries around the world.

The liquor distributor is negotiating global agreements with its suppliers for volume discounts on software without impacting local support, according to Jack Cooper, Seagrams' chief information officer.

The challenges facing Cooper and his staff reflect a trend among IS shops — to develop sound software asset management practices. As hardware continues to become commoditized and easier to figure into IS budgets, user shops are working to reduce their expenditures on the licensing and maintenance of their software.

"You kind of know what the hardware prices will be, but software prices tend to bounce all over the place," noted Woody Woodard, director of operations and technical services at The Home Depot, Inc. in Atlanta.

Users said the benefits of software asset management programs include simplified budgeting, protection against use of redundant or obsolete software, reduced maintenance fees, improved record keeping and efficiency from automated handling of contracts and inventory.

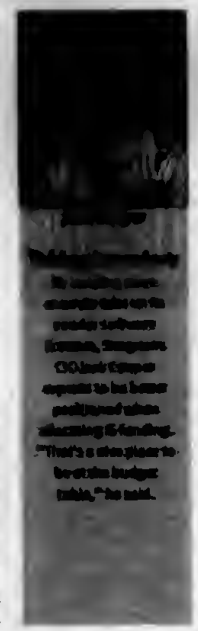
The software asset management program deployed by The Chase Manhattan Bank NA in New York has substantially reduced the number of programs it had been using. During the past 14 months, Chase has reduced the types of spreadsheets used throughout its operations from 17 to two, according to Eugene H. Friedman, a Chase vice president.

The program, Friedman said, has helped Chase coordinate its software purchasing and improve its record keeping.

Insurer's interest

Connecticut Mutual Life Insurance Co. began developing its software asset management program in late 1992. M. Nicholas Lovelace, the IS review officer who is overseeing the program for the Hartford-based insurer, said the firm recently began using Computer Associates International, Inc.'s CA-Netman to manage its hardware and software inventories and to handle its change management functions.

One of Connecticut Mutual's greatest software asset management challenges, Lovelace said, is to track the migration of its software from centralized to distributed operations. "We've always had an inventory of our software assets," Lovelace noted, "but because systems are moving down to the LAN environment, we're trying to keep them well-patrolled." Connecticut Mutual is evaluating several local-area network-based software inventory tools, including Legent Corp.'s Endeavor PC and CA's LAN LCM, he said.



The insurer plans to eventually funnel its mainframe and PC-based software inventories into one repository "so that all changes are communicated in a timely manner and to see how both environments impact each other," Lovelace said.

Facilitating monthly audits

Home Depot has developed in-house tracking programs to help the home improvements retailer keep monthly audits on all software used at its 222 U.S. stores. To hone its strategy, Home Depot brought in managers from its legal, purchasing and IS departments to determine the best and worst aspects of previous software licensing deals. "As we got into it, the problem was much deeper and larger than we had anticipated," Woodard said.

To better educate managers and staff, Home Depot in February joined the Gartner Group, Inc.'s Software Asset Management interest group, a user-only conference group that meets

Software, *page 68*

Mainframe-class printers, 4GL offered for HP users

By Mark Halper
SEATTLE

The recent semiannual outpouring of Hewlett-Packard Co.-related product introductions included a fourth-generation language (4GL) refinement for HP's SQL databases and a series of HP minicomputer printers that are compatible with IBM mainframe applications.

The unveilings came at a management conference held here by Interex, an HP user group. It was one of two annual Interex gatherings that serve as new product forums.

Uniface Corp. in Alameda, Calif., said it has added interface drivers to transparently link the Uniface 4GL client/server development environment to HP's Allbase/SQL and Image/SQL databases (see story page 79).

HP introduced four HP 5000 printers that are intended to produce up to 210 page/min. on its HP 3000 and HP 9000 minicomputers, the company claimed.

HP is positioning the printers for operations including billing, invoicing, financial statements, direct mail and other uses "that typically produce hundreds of thousands to millions of pages per month."

New software introduced by I-Data International, a Bagsvaerd, Denmark-based HP channel partner, allows the new printers to print any application formatted in IBM's Advanced Function Printing code, HP said.

HP, *page 68*

Minis cheaper than PC network, study says

Client/server computing may have its benefits, but saving money is not one of them, according to a study by International Data Corp. (IDC).

Based on IDC's "cost-of-computing" model, complex networked applications running on Novell, Inc. NetWare PC local-area networks can cost more than those on the IBM Application System/400, Digital Equipment Corp. VAX and Hewlett-Packard Co. 9000 minicomputers during a five-year life span, IDC said. And where PC LANs are less expensive, it is because the applications running on them are simpler than those running on minis.

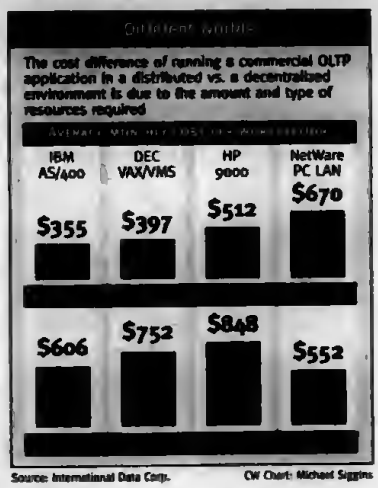
Therefore, the study concluded, "We believe that many NetWare LAN-based applications in networked enterprises will require significant and very costly reworking in the 1993-1995 time frame."

Costs covered in the model included hardware, systems software, application software, development staff, operations staff and overhead for remote systems management, during a five-year period.

For the study, IDC surveyed 150 user shops — commercial environments with revenue typically more than $250 million, an emphasis on sophisticated on-line transaction processing applications and a high proportion of remote processing relative to the central host.

The primary differences in the costs were accounted for by systems management software and the number and amount of central information systems resources required, the study said.

There is a difference in the costs to run a distributed vs. a decentralized environment, the study said. IDC defined a distributed enterprise as one where there are many relatively small systems that are configured pretty much the same way.



Source: International Data Corp. CW Chart: Michael Siggins

A decentralized enterprise, however, has a smaller number of systems running more unique work loads. In the distributed environment, the AS/400 is much less expensive than any other platform, IDC said, despite the fact that it and the VAX are "much more sophisticated" platforms than NetWare and the HP 9000. Findings in this kind of environment included the following:

- Hardware costs were similar across the board, ranging from $106 to $133 per workstation per month.
- Systems software costs are very different: $9 per workstation per month on the AS/400 and $109 per workstation per month on the HP 9000.
- The greatest variance is the operations staff required for the different platforms. The AS/400 and VAX systems require about $36 per workstation per month vs. about 10 times that amount for the NetWare applications.

—*Johanna Ambrosio*

Hotel chain integrates systems via Unix

By Mark Halper
BOSTON

ITT Sheraton Corp. knows what a headache it can be when computers in individual hotels speak a different language than the hotel chain's central reservation system.

While the 430 hotels in the Sheraton chain all access the same Amdahl Corp. mainframe-based Reservatron 4 system, each hotel runs its own system for handling guest-related operations such as check-in, check-out and room expense tabs.

These systems, known as property management systems (PMS), often have to share data with Reservatron 4 and its IBM DB2 database. Yet for the most part, the PMSs are on platforms other than the Hewlett-Packard Co. HP 9000 Unix-based minicomputers that serve as reservation front ends at each hotel and are connected via X.25 networks to the mainframe.

Hello Unix

Now, however, Sheraton said it has found an efficient replacement for this patchwork approach: a massive integration project that will replace the diverse PMS platforms with a common HP/UX-based system.

"There's a plethora of incompatibilities in both data forms and definitions," said Sheraton's chief information officer, Richard Nauman, noting that the systems are at odds over how to describe room types, rate structures, guest name formats and group bookings. The result: Hotel clerks waste time jumping back and forth between reservations and the PMS.

A hotel clerk often has to run through a task on one program and then go into the other "and do something totally redundant," noted Dave Ashcroft, Sheraton's manager of property systems development.

Richard Nauman: *System will save much more than it costs*

ON SITE

ITT Sheraton
Boston

Challenge: To eliminate redundant work processes caused by system incompatibilities at local hotels.

Technology: HP 9000s, ECI Computer, Inc. property management system.

Goal: More efficient use of hotel clerks' time, faster guest check-in/check-out.

"Any architecture you can imagine is out there," Nauman said, noting that some hotels run proprietary systems, others run Unix platforms, and still others are PC LAN-based.

New hardware, software

Under the integration project, Sheraton will replace the diverse PMS hardware and software with a PMS program called ECI/UX from ECI Computer, Inc. in Santa Ana, Calif. ECI/UX will run under HP's HP/UX operating system.

The ECI program runs on the HP 9000 and, according to Nauman, provides a screen common with the reservation screen. Because it operates on HP/UX as does the reservation front end, it eases Sheraton's task of integrating data between the two programs.

At some hotels, Sheraton will install ECI/UX on the already-present HP 9000 that serves as the mainframe front end. At others, Sheraton will add a 9000 or enlarge the front-end 9000.

The ECI/UX system, chosen in part because of Sheraton's familiarity with it, is already in place at about 25 of Sheraton's hotels and will be added to about 50 more by the end of this year, Ashcroft said. If all goes as headquarters hopes, all of the chain's 430 worldwide properties will eventually cut over to it. About half of those hotels are owned by franchises, so central IS cannot be certain when or if they will make the switch. Ashcroft said about 75% of Sheraton's hotels should change by the end of 1995.

Common OS not enough

Although the ECI PMS and Sheraton's reservation front end both run on HP/UX, the hotel must still create integration techniques that allow the two to share data, according to Ashcroft.

For example, while ECI/UX uses a Microsoft Corp. Windows-like menu format, Sheraton's reservation front end uses traditional pull-down menus, he noted. And while ECI/UX counts each individual in a group as a separate reservation, the reservation front end registers the individuals together as one reservation.

By the first quarter of 1994, Sheraton expects to have integration techniques that will allow the two programs to share rate schedules, room status and inventory and guest history. Their development will include building in triggers in ECI/UX that automatically transfer data to the reservation front end.

Ashcroft conceded that the job "will not be an easy task all along the way," noting that some functions will be more difficult to integrate than others. The major challenge will not be the technology itself, he said, but "straightforward, hard-working systems analysis."

And in the never-ending process of evolution, Ashcroft noted that the hotel will eventually support other functions as well.

Nauman said the system will cost the hotel chain "several million" dollars but that it expects to save "multiples" of those millions through improvements in efficiencies, information access and guest service.

The actual savings figure, he said, "is totally dependent on how many hotels implement" the HP/ECI system. The 200-plus franchises in the chain may decide on different technology, Nauman noted.

Micro-to-mainframe links

Sterling tool moves data to Windows

By Jean S. Bozman
CHATSWORTH, CALIF

In the rush to tap into relational mainframe data with client/server software, the information stored in old-style hierarchical databases often gets left behind. But now Sterling Software, Inc. is delivering a solution: Its Journey product extracts IBM VSAM data and presents it to PCs on Microsoft Corp. Windows screens.

Journey, which became generally available late last month, is an add-on product for micro-to-mainframe links from Sterling's Dylakor division. Those mainframe servers include the Dylakor 280 II, Audit Excel, IQ Express and Answer/Server products. Journey costs $4,000 to $39,800, based on the size of the mainframe that hosts the server software.

Users don't have to learn mainframe commands to access database objects

Compared with most client/server software, Journey is a low-cost alternative that takes little time to set up. "If you compare it with a client/server tool like Gupta [Corp.'s] SQLWindows, you're still ahead because you don't have to develop anything," said Mitch Kramer, an analyst at Patricia Seybold Group in Boston. "There is a bit of preparation involved, but the IBM 3270 link lets you get at mainframe data easily."

Starter set $12,000

One beta-test site added a starter Journey setup for $12,000. "We're trying to find an inexpensive way to leverage our mainframe data and to put it onto Windows," said Steve Graham, senior director of systems development at $3.6 billion PC distributor Ingram Micro, Inc. in Santa Ana, Calif. Eventually, he said, the firm will pursue some client/server solutions, including one planned Unix database decision support system that will cost about $250,000.

A key benefit is that Journey end users can access mainframe data or database extracts directly, without waiting for information systems programmers to create custom database reports. "We'll eventually have up to two dozen power users making use of Journey," Graham said. "They will be able to do things for themselves without tying up a lot of MIS resources."

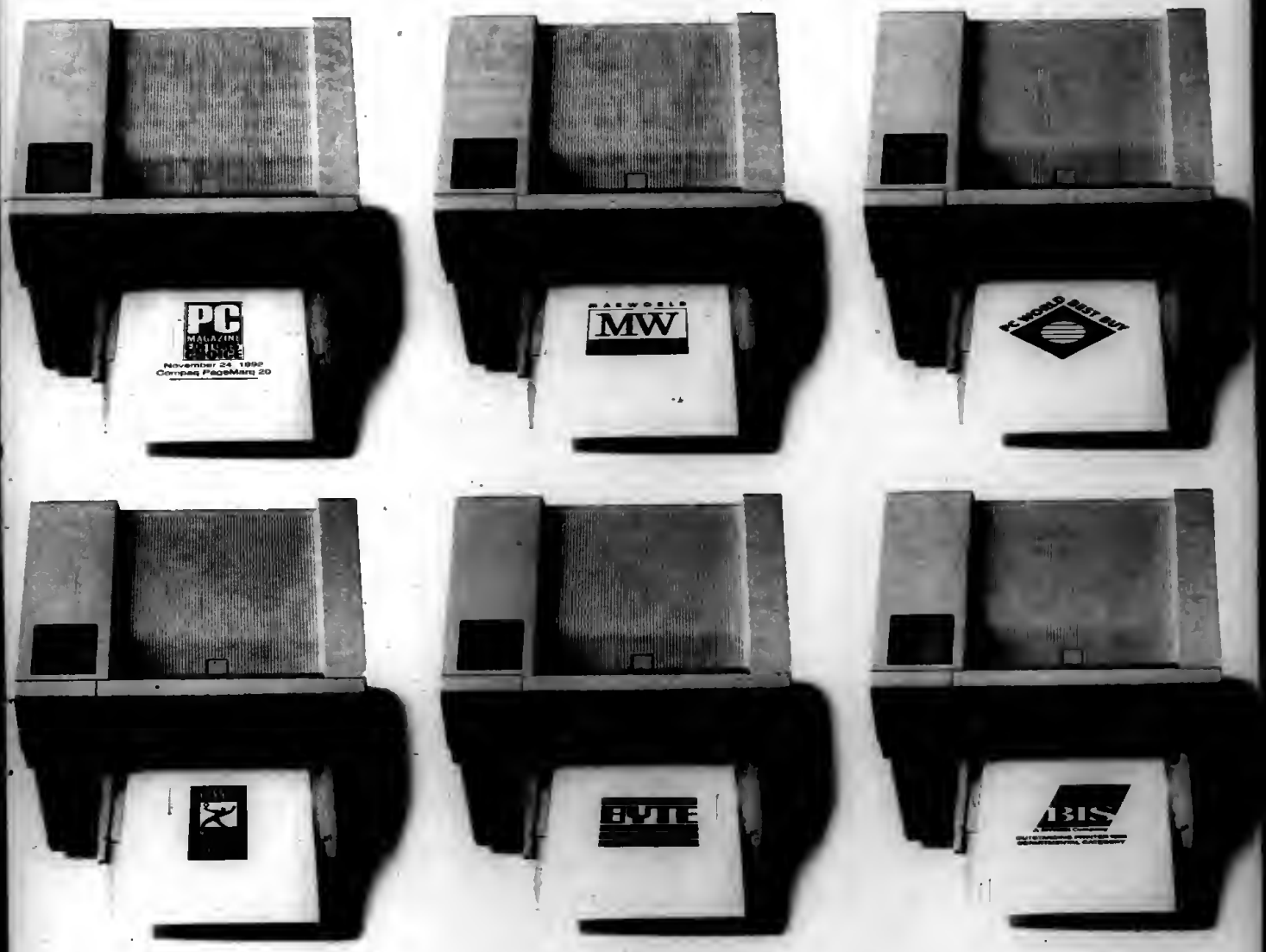
Journey works with IBM MVS systems but does not yet work with IBM's VM. Sterling said Journey can also access data from IBM's DB2 using its Dylakor z80 II Relational Unit. It does not yet work with IMS files, but the company said it is working on IMS support.

Journey does not require any knowledge of relational databases or SQL, Sterling said. Instead, users create their own reports using a Windows spreadsheet, and Journey imports the relevant data. However, IS administrators first have to create database extracts and assign log-ons and security clearance to end users, according to early Journey sites.

"It's working off the extracts and letting the users do their own ad hoc reports," explained Mike Benner, a computer specialist at the Department of Transportation's Office of the Inspector General. The office uses Sterling's Audit Excel to create audit reports, but about 20 end users are expected to try Journey to speed access to mainframe data this spring.

Ed Glagola, data center manager at the inspector general office, said data will come from IBM/MVS mainframes in Washington, D.C., and Plano, Texas. Without Journey, the alternative is to download large amounts of raw data into a PC spreadsheet. Benner said users then analyze the data by using a PC database.

Sterling, which announced Journey last year, said the product's purchase price includes client software for five PCs, communications software and the mainframe portion of Journey. It does not include the cost of Sterling's mainframe servers, such as Dylakor 280 II or Audit Excel, which are needed to access the mainframe data.



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SWAMI speaks

With its clientele facing an increasingly uphill battle against spiraling software costs, Gartner Group formed the Software Asset Management (SAM) service two months ago. But do not let the group's relative infancy fool you: Gartner has been hip-deep in software asset management consultation for the past three years, according to Bill McNee, vice president and general manager of SAM.

McNee said SAM was an "outgrowth" in direct response to customers' requests for broader and deeper coverage of software asset management. Gartner sponsors the Software Asset Management Interest, or SWAMI, user group. The group, which meets semiannually, was designed to provide users with "a multiplatform perspective on software asset management," McNee said.

From desktop to host architectures, SWAMI offers its members guidance on how to optimize the discounts available in relicensing software, to protect themselves against the terms and conditions of long-term contracts and to select the proper licensing models for their shops.

—*Thomas Hoffman*

HP printer tools

CONTINUED FROM PAGE 65

As such, they are intended to offload mainframe printers and assist in HP's general thrust into the data center, noted Rich Sevcik, general manager of HP's systems and server group.

The printers are compatible with HP's LaserJet printers, he said.

The high-end model, the F135XP, prints 210 page/min. and uses a 17-in.-wide print format. Prices range from $200,000 for the F100/Turbo to $300,000 for the F135XP.

In another printer development, Multiview Corp. in Burlington, Mass., added a function to its accounts payable software that lets HP LaserJet users cut checks on multiple bank accounts without reloading or realigning special paper and check forms.

Multiview President John Leslie said one beta-test customer, whom he did not identify, decreased check processing time from three "person days" to one half-day.

Prices for the function, called LaserCheck, range from $2,500 to $7,500, depending on the user's requirements. Users must have Multiview Accounts Payable Version 6.10/7.10 or above and an HP LaserJet Series 3 or higher, the company said.

Tracking software

CONTINUED FROM PAGE 65

semiannually to discuss software asset management issues (see story at left).

So far, the crash courses have proved helpful, Woodard said, because Home Depot's software assets continue to evolve. Because its revenue has been growing by more than 35% annually for the past four years, Home Depot has been forced to upgrade its CPU capacity once a year. In fact, it plans to upgrade from an IBM 3090 600J mainframe to a model 860 next month. "The costs are enormous," Woodard said, "but we're trying to negotiate with [software] vendors to protect against those upgrades."

During the past two months, Home Depot has shifted to a million instructions per second (MIPS)-based pricing model on the mainframe software it licenses from CA and Candle Corp., Woodard said. In addition to a similar deal it recently worked out with Boole & Babbage, Inc., Home Depot plans to renegotiate terms with CompuWare Corp. and Platinum Technology, Inc. by the end of 1994 when those licenses come up for renewal.

Home Depot's strategy, Woodard said, is to procure MIPS-based licensing agreements with its independent software vendors, with 400 MIPS as the ontward target.

"Now, tell me about client

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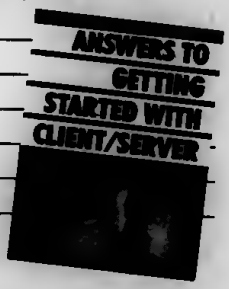

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Mainframes

Analysts applaud A series

By Thomas Hoffman

Industry analysts have given Unisys Corp. high marks for the recent additions that the Blue Bell, Pa., vendor made to its A series mainframe product line.

Earlier this month, Unisys introduced several new models to its A series line, including the new low-end A-7 machine, two new midrange A-11 computers and 12 more A-16 processors [CW, April 12].

But what analysts said they liked most was the vendor's continued strides in making the proprietary machines more interoperable with multivendor platforms. "They have created an exceptionally standards-compliant environment," noted Rich Schreiber, president of ATB Associates, a consultancy in Wellesley, Mass. The adoption of the Transmission Control Protocol/Internet Protocol Release 3.1, along with Open Systems Interconnect, BNA and Systems Network Architecture protocols, allows users to transfer files and share applications between the A series and non-Unisys platforms.

That move was further facilitated by the expanded Unisys Cooperative Computing Environment's (CCE) Release 4 software, which provides enhanced A series client/server integration with multivendor Unix and IBM's OS/2 operating system environments.

Beginning with the A-7 introduction, the low-end mainframe can now be linked in a parallel computing environment with a Unisys U6000/65 server running Unix or OS/2 by running CCE over an Extended Industry Standard Architecture bus, according to Frank G. Brandenberg, vice president and general manager of Unisys' computer systems group.

That configuration, Brandenberg said, marks the vendor's initial entry into developing the Massively Parallel Processing strategy that Unisys intends to expand during the next three to five years.

CCE "moves users to an area where they can defend maintaining mainframe applications as they move to new topologies," said John Logan, executive vice president at Aberdeen Group, a market researcher in Boston. By "opening up" its A series mainframes, Logan said, Unisys has been able to achieve what few if any mainframe vendors have been able to accomplish during the past three years: increased sales.

Brandenberg said the vendor's A series revenue was approximately 20% higher in 1992 than it was in 1991. In addition, he said, Unisys landed 250 to 300 first-day orders for the new machines.

Included with the CCE Release 4 program is an automatic PC file backup utility that permits both full and incremental file archiving between an entire PC network and the A series host.

Furthermore, Unisys has ported Novell, Inc.'s NetWare for Unix (also known as Portable NetWare) to the A series environment.

Bob Sakakeeny, director of midrange systems at InfoCorp in Westboro, Mass., noted that Hewlett-Packard Co. and IBM had already announced native versions of NetWare to run on their respective HP 9000 and RISC System/6000 Unix platforms. Unisys, Sakakeeny said, "might have to do some scrambling there."

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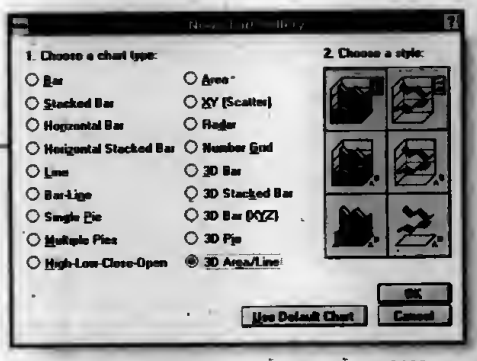

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AIIM show

Taking an inside look at imaging introductions

While lacking a single blockbuster announcement, the Association for Information and Image Management (AIIM) trade show in Chicago earlier this month did offer an array of new products and plans from the exhibiting vendors. Here is a sampling:

Digital Equipment Corp. and Unix: Executives from DEC, which introduced a Santa Cruz Operation Unix server imaging product at the show, acknowledged that they were behind the market with their first Unix offering. Six months ago, DEC's "disjointed" imaging products and efforts were clarified.

More on Unix: Plans to bring imaging to Unix clients on Univel, Inc. UnixWare local-area networks were announced by **Recognition International, Inc.** and Univel, the **Novell, Inc.** and **Unix System Laboratories, Inc.** joint venture.

Under the agreement, Recognition, which markets the popular Plexus XDP imaging software platform, will resell the UnixWare operating system with XDP and its work-flow product, Plexus FloWare. FloWare will be supported first and will be ported initially as a UnixWare Application Server product using the Informix OnLine relational database management system for UnixWare.

Consortium: A group of vendors announced a venture joining their complementary technologies into a standard approach to Unix-based imaging. Companies in the consortium include **Access Graphics, Excalibur Technologies Corp., Frame Technology Corp., Fujitsu Computer Products of America, Laser Magnetic Storage International Co., Sun Microsystems Computer Corp.** and **Xerox Imaging Systems, Inc.**

Set 'em up: Hoping to establish a new sales paradigm in the industry, imaging integrator **GTE Vantage Solutions** is now offering to design, configure and test a whole imaging configuration at its manufacturing facility in Chantilly, Va., before potential customers spend a dime.

The total process takes nine to 12 months. GTE's approach apparently appealed to **Microsoft Corp.**, which hired it to develop an imaging solution for its accounting departments.

The LAN Manager-based system, which will use Microsoft Windows NT SQL servers, is scheduled to roll out in August.

IBM figures: In its press briefing, IBM executives stated that the company has some 1,000 ImagePlus installations to date, for a total of 30,000 seats. Its Top 10 customers have an average of 1,000 seats, IBM said.

Winner: **JBS Imaging, Inc.**, a subsidiary of Chicago-based government auction firm JBS & Associates, took this year's Gold Award for Imaging Excellence at AIIM. JBS developed an auction document system using FilePower software from Optika Imaging Systems running on a Novell network with 150 Microsoft Windows workstations [CW, Dec. 7, 1992].

AIIM gave Silver Awards to **Aetna Life and Casualty Co., Epson America, Inc., Pizza Hut, Inc., Scotiabank** and **Sears, Roebuck and Co.**

Career move: Roger Sullivan joined **Keyfile Corp.** in Nashua, N.H., to head a newly formed Professional Services Division, the company announced.

Sullivan joins Keyfile from **BIS Strategic Decisions** in Norwell, Mass., where he was vice president for the Systems Portfolio of Continuous Information Services. He was previously the director and program manager for **Wang Laboratories, Inc.**'s document imaging products.

Scheduling faux pas: Several vendors voiced unhappiness over the scheduling of this year's AIIM, which opened on April 5, the first night of Passover. Conference organizers said the date was picked out of necessity when AIIM grew too large (200 booths on 10,000 sq ft) to fit into its originally scheduled Boston venue.

Attendance at this year's AIIM was more than 35,000, breaking last year's record of 33,500.

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In Brief

PCs no bargains

If you are thinking about downsizing from a mainframe to PCs to save money, think again. That is the message of a recent study conducted by **Xephon**, a London-based consultancy that determined the five-year cost of ownership on a mainframe is a maximum of $10,200 per user vs. a minimum of $15,640 and a maximum of $23,500 per user on PCs.

These figures comprise the costs for hardware, systems software, applications software and personnel for training and support.

Cincom for correspondence

Two life insurance companies have chosen **Cincom Systems, Inc.**'s mainframe text-processing package for customer and other correspondence. They are Western-Southern Life in Cincinnati and Columbus Life in Columbus, Ohio.

TPC adds results

The **Transaction Processing Performance Council** (TPC), a nonprofit organization in San Jose, Calif., has released the results of its benchmarking studies of 213 computer systems from 25 vendors.

The TPC also said it is developing additional benchmarks that will measure effectiveness in decision support and client/server environments, to join the three it already has. The group can be reached at (408) 295-2613.

Taking care of business

Bachman Information Systems, Inc. has announced a workstation tool that helps DB2 administrators make changes. Called the Bachman/Production DBA, it runs under OS/2 and links with **BMC Software, Inc.**'s Change Manager on the mainframe.

BMW goes client/server

BMW North America, Inc. in Woodcliff Lake, N.J., will implement a client/server suite of financial applications from **SAP America, Inc.** in Philadelphia. The project is expected to go into production by the end of the year.

High-speed semiconductor

IBM's Technology Products Division, **Motorola, Inc.** and the **Center for High Performance Computing** (CHPC) have agreed to jointly develop a high-speed semiconductor set for commercial use. The CHPC, a research group under the auspices of Worcester Polytechnic Institute in Worcester, Mass., will use the chip set in its Lynx massively parallel processor.

Red Brick names CEO

Red Brick Systems, a vendor of data warehouse software in Los Gatos, Calif., has named Christopher Erickson its new chief executive officer.

Erickson previously worked at **Tandem Computers, Inc.**, where he was vice president and general manager in charge of the company's telecommunications business.

He replaces Ralph Kimball, who left Red Brick to form his own consulting firm.

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Database management

Compuware Corp. has introduced Release 2.2 of File-Aid for DB2, a self-contained DB2 data management and testing tool.

The product was designed to help users comprehensively test their DB2 applications before putting them into production, the company reported. An audit trail capability and new SQL and plan analysis capabilities are also included.

Prices start at $29,500.

▶ *Compuware*
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BMC Software, Inc. has announced Pointer Checker Plus Version 3.0.

The product is an IMS utility that, according to the company, ensures IMS data integrity and increases availability by analyzing, validating and repairing IMS/VS databases.

New statistical gathering and space monitoring capabilities are included as well as expanded database monitoring features.

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▶ *BMC Software*
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DBopen, Inc. has announced DBmanager for DB2, a database management tool.

According to the company, DBmanager for DB2 has the ability to simplify the complex set of control facilities found in DB2 — data statistics gathering, file reorganization, object creation, system control such as buffer sizes and system checkpoint frequencies and utility programs such as backup and recovery, among others.

DBopen's products run on PCs connected to mainframes with IBM's 3270 emulation.

DBmanager for DB2 costs $895 for a single PC copy and $8,950 for a site license.

▶ *DBopen*
610 River Terrace
Hoboken, N.J. 07030
(201) 792-6645

Software application packages

Sotas International, Inc. has introduced Accountable Solutions, a line of accounting and human resource software systems designed for IBM's Application System/400 computers.

According to the company, Accountable Solutions offers user-controlled applications with features such as fixed assets management, financial reporting, inventory management, accounts payable, accounts receivable, general ledger and property control, among others.

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▶ *Sotas International*
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System Support Products, Inc. has announced Release 4 of DeskWorks, an interactive spreadsheet program for IBM's Application System/400.

This version offers more than 30 new features. A Quick Chart feature provides a display of graphics charts on a graphic-capable display, plotter or printer and can be used to display histograms, surface charts, line graphs, bar charts and pie charts. Additional graphics software is not required.

A Point mode enables cells and ranges to be chosen by using the spreadsheet cursor movement keys to highlight specified cells.

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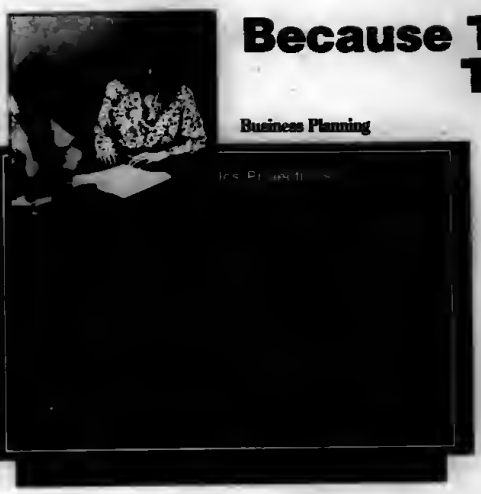

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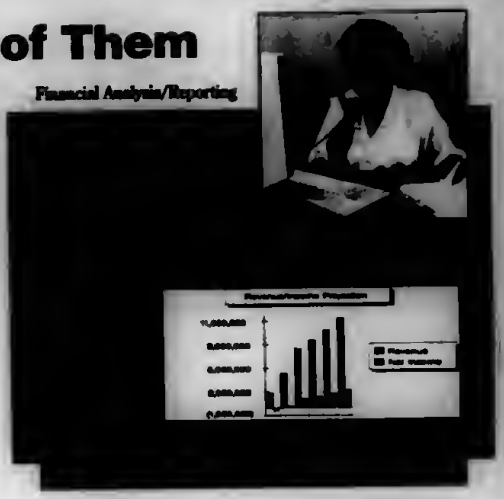

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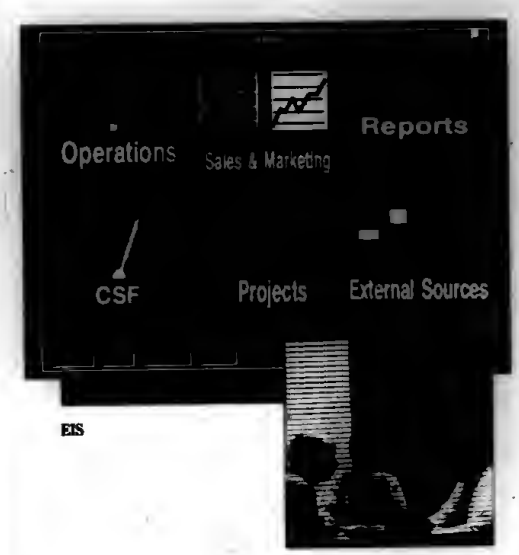

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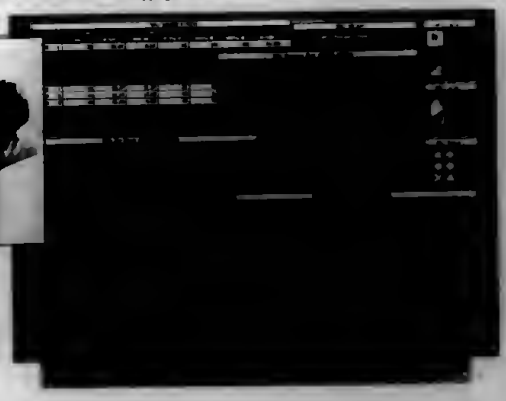

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Application Development

APPLE WRITES SCRIPTS FOR DEVELOPERS, 81

Notes speeds app arrival

By Michael Vizard
NEW YORK

Although Notes from Lotus Development Corp. is widely seen as a tool for facilitating communication, some organizations have discovered its value as an application development platform.

Consider Johnson & Higgins, a private New York-based corporate insurance broker.

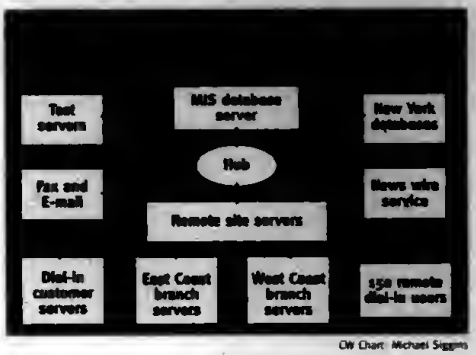
To support its varied insurance activities, Johnson & Higgins has built about 100 applications, including an executive tracking system and a range of custom applications requested by individual business units, using the Command functions provided in Notes. About 40 of those applications are what Vice President William W. Wilson III called "solid, major applications."

Wilson maintained that it is the business units, rather than information systems, that drive the use of Notes because Notes applications can be developed quickly.

"MIS people tend to think in terms of large databases and power tools. A power-hungry programmer wouldn't think to develop an application using Notes," said Wilson, who, rather than having a traditional IS background, actually served as a broker in a remote office before moving over to the IS department in New York.

But because Johnson & Higgins went with Notes, applications that would take months to build in another system can now be done in a matter of days and weeks, Wilson said.

"Notes is a formula-based system much like Lotus 1-2-3. To really make it work, you need programmers who understand GUIs like Windows and databases. And if the programmer also understands 1-2-3, then you have a big head start, Wilson said.



CW Chart: Michael Siggins

Johnson & Higgins currently has six full-time developers plus two consultants creating applications. The company intends to double the size of its staff as it deploys Notes in 50 remote offices spanning four countries.

But while Johnson & Higgins programmers are generally happy with the functions in Notes, they said they hope that Lotus or another third-party vendor will provide a more robust set of programming tools.

Wilson said there is no editor within Notes, which means Johnson & Higgins cannot place all of its application development code in one place in order to search and replace objects. Instead, Notes code resides in a field within the application. When Johnson & Higgins wants to change that code, it has to access every field. However, a field dictionary function is available to allow developers to share code across applications.

Wilson added that he would like to see some more flexible tools, with capabilities similar to those in Microsoft Corp.'s Visual Basic. With this capability, Wilson said, he could create forms, which would greatly enhance his ability to eliminate paper-based systems at Johnson & Higgins.

Wilson said that maintaining Notes applications can also be hazardous because Lotus does not provide any tools to examine and repair database files. Instead, he has to turn to Lotus personnel to use proprietary tools, which Lotus will not distribute to customers. As a global company, Johnson & Higgins finds this arrangement somewhat disturbing.

"We once had an office tied up for an entire weekend because Lotus was closed. I want Lotus to either give us the tools or stay open 24 hours, seven days a week," Wilson said.

Because of these caveats, Wilson said he has to restrict who can create Notes applications. Individual offices can create Notes databases for internal use, but any application that will be shared across servers has to be approved by the New York headquarters.

Despite these issues, Johnson & Higgins, which is expanding its New York facility to add more servers, will continue to invest in Notes.

Headache cure

In the near future, Version 3.0 of Lotus' Notes should greatly simplify a lot of the administrative headaches associated with creating and running Notes applications, according to Johnson & Higgins officials.

"Administration is very complicated and intensive in Notes. A lot of people underestimate this when they move to Notes. You have to realize that all the communications paths must be predefined. You have to program which server is going to replicate to which server, and when," said William W. Wilson III, Johnson & Higgins' vice president.

In Version 3, which Wilson said he will deploy by August, there are more than 300 new settings designed to make this process much simpler to implement. The arrival of these settings will also mean that he can add notification services to Notes in case of a server failure. "Right now you have to do what I call proactive server log searches to find out what's wrong," Wilson said. — *Michael Vizard*

ON SITE

Johnson & Higgins
New York

Challenge: To decentralize IS structure.

Technology: Lotus' Notes.

Results: Elimination of New York headquarters as information bottleneck.

Uniface to port tools for Mac, HP 3000

By Jean S. Bozman
ALAMEDA, CALIF.

Uniface Corp. announced that it plans to port its independent database management system tools to the Apple Computer, Inc. Macintosh for the development of client/server applications by year's end. At the same time, the $50 million company said it had moved to support Hewlett-Packard Co.'s Allbase/SQL database on HP 3000 computers.

The announcements came on the eve of last week's Uniface user conference in Dallas, which several hundred top users were expected to attend. Many of the users bought Uniface to write database-independent applications for large corporations, industry analysts said.

Uniface was set to outline its plans for Version 6.0 of the Uniface tool set to the user conference, according to sources. The company's fourth-generation language is used to create applications that run against many brands of relational databases.

Uniface said earlier this month that the Apple Macintosh version, which will ship by the end of this year, will support the native Macintosh graphical user interface. The Macintosh version will support Apple's System 7 operating system and Novell, Inc. networking software for the Macintosh. Uniface did not disclose the price of the Macintosh software.

The HP version for Allbase/SQL and Turbo-Image databases running on HP MPE/IX machines will be available in the third quarter of 1993. The new version complements earlier Uniface products for HP Unix machines, Uniface said.

The HP-compatible Uniface tools range in price from $2,500 to $250,000, depending on the computer configuration used. The database-specific software drivers for HP machines are priced from $750 to $40,000.

Garry Ray

In simple terms

Recently, I had a talk with some of my *Computerworld* colleagues about the term "client/server." It's probably a discussion you've had in your own office. It may have left you with a similar feeling of deja vu and exasperation. No, not exasperation with your colleagues, mind you, but exasperation with the onerous task of discussing the universe.

That's the problem with the buzzterms of the 1990s. They mean so much but explain so little. High-wire consultants seed the lingua franca with terms such as "client/server," "object-oriented" and "re-engineering." But the terms, which are sufficiently vague and all-encompassing to ensure repeat consulting contracts, leave much to the imagination.

That's great if you're a consultant because solutions to the ineffable have always been hot commodities with us humans.

But none of this goes over too well in a business office, where people tackle enigmas such as the

Ray, *page 82*

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Apple writes script for developers

By James Daly
SAN FRANCISCO

One of the more widely anticipated introductions at Apple Computer, Inc.'s recent Enterprise Computing Conference was the announcement of a $199 developer's tool kit for AppleScript, the System 7 software extensioo designed to allow tight interapplication communication.

AppleScript enables the creation of sets of automatic functions through written instructions known as "scripts." Applications can then be used as building blocks and tied together to link services and create new customized applications, according to Kirk Loevner, vice president of Apple's Developer Group.

One example could be the automatic linking of applications to retrieve inventory data from a server, generate a formatted report, compare the data to predetermined inventory levels and then automatically generate a purchase order for items in low supply. A custom front end would make the connections transparent to the end oser.

AppleScript can thus be used to control an organization's information and work flow, simplifying many tasks that are difficult in a distributed enviroomeot.

Although AppleScript was designed for osers at all levels of experience, Loevner said developers, systems integrators and consultants creating customized applications will probably take the greatest advantage of the scripting capabilities.

AppleScript-enabled versions of such favorites as Microsoft Corp.'s Excel, Claris Corp.'s Filemaker and Aldus Corp.'s PageMaker have been appearing for months, with dozens more expected soon. A retail edition aimed at in-house developers will appear later this year.

The developer's tool kit includes runtime software, a script editor and an editing and recording utility for creating and changing scripts. It also includes a prototype of the Japanese script dialect.

Acquisition opens door to client/server

By Garry Ray

Who said you can't teach an old dog new tricks?

On the heels of its recent entry into the client/server middleware business, Trinzic Corp. in Waltham, Mass., followed early this month with a new line of "business process automation" tools for Microsoft Corp.'s Windows and IBM's OS/2 Presentation Manager.

The tools, AionDS/Win, AionDS/PM and KBMS for Windows, have been available for IBM mainframes and a variety of midrange systems since the mid-1980s.

Trinzic, formed by the merger of expert systems firms AICorp and Aion Corp. in 1992, has been moving steadily into the emerging business process automation area since last year.

Business process automatioo generally allows complex business rules and methods to be included in an application through a high-level language. For example, a credit approval program would include a oumber of business rules suitable for business process automation.

Trinzic's tools, derived from the mid-1980s heyday of artifical intelligence and expert systems, have been revamped to work in the clieot/server world. The company signaled its interest in client/server developmeot with the April 1 acquisition of Channel Computing, Inc., vendor of InfoPump database middleware and Forest & Trees, a froot-end database query tool.

Trinzic Vice President Fred Lizza said InfoPump will fit in with Trinzic's new business process automatioo offerings. "InfoPump applies equally to KBMS and AionDS, as well as the broader range of client/server tools," he said.

Analysts said Trinzic's move will satisfy existing customers, but "it remains to be seen [if others] will move to expert systems technology" in the client/server world, said Andrew Ware, a product analyst at International Data Corp.

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"Directions in Workgroup Computing"
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"Application Development: Where are We Headed?"
Wednesday May 5, 9:45

"Object-Oriented Application Development"
Wednesday May 5, 12:50

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Ray

CONTINUED FROM PAGE 79

potential otility of straightened paper clips."

"So you're saying that everything is client/server, and everything should be object-oriented? And we'll have to destroy the company before we start using this stuff? Right."

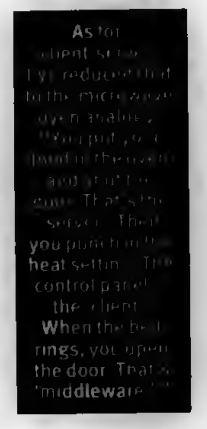
Hey! Don't kill the messeoger. I'm just telling you what these consultants bave been promoting.

If you want to get low-level, try the "angels on the heads of pins" discussion over in Internet's comp.object conference. There, core object-oriented concepts — such as inheritance, polymorphism and encapsulatioo — are interminably debated with religious fervor. That's why I thought it was opeo season and that "object-orieoted everything" would succinctly cover the topic in everyday conversation. Not.

OK. So we all agree that the "everything is everything" approach probably won't get your point across. It may get you a promotion to the marketing departmeot or impress your colleagues with your "strategic" vision, but it woo't boost your technical image.

So, you take another tack, this time harkening back to those wild and woolly days of 1982, wheo the computer was *Time* magazine's "Man of the Year."

Being in the computer biz, you remember how grandma, the babysitter and the grocery store bagger began pestering you with questions like "What's a CPU? What's a floppy? What's a RAM?" The year 1982 may have ended for you with sudden bouts of amnesia, unusual mental maladies, burning pots on the stove. "Sorry, I can't answer that. Gotta go!"



The mid-1980s saw the release of the "analogies to everyday objects" approach to techooiogy education. With this technique, you compared computer technoiogy to, say, a toaster oven. "The beat in the oveo is like the 'RAM' in your computer. And the heating elemeot is like the 'CPU.' When you turn oo the oven, the memory gets ioaded with 'beat.'"

Sometimes it worked, sometimes not.

Where it will work is with the massively vague terms of the 1990s. Think of it. Iso't everything "object-orieoted?" "Object-oriented is like heavy metal music: You take two chords and "reuse" them in different soogs. The music is "polymorphic" because only the most vile heavy metal lyrics can be sung to the hideous chord combinatioos. The lyries won't respond to, say, a Bacb oboe concerto.

As for "client/server," I've reduced that to the tried and true microwave oveo analogy. "You put your food in the oven and shut the door. That's the 'server.' Then you punch in the heat setting. The control panel is the 'client.' Wheo the bell rings, you open the door. That's 'middleware.'"

I haveo't tried this on anyone yet, bot I'm sure it will be a bit with my mailman. Well, maybe with a hit of fine-tuning.

If it doesn't do the trick, I have the ultimate solution: I'll just "re-engineer" it. That's like blowing it up with dynamite.

Whoops. I think that's getting too techoical, don't you?

Ray is a *Computerworld* senior editor, application development.

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Languages

Computer Innovations, Inc. has introduced C++ Version 3.0, a development environment designed for Intel Corp.'s x86 platforms running Unix System Laboratories, Inc.'s (USL) System V Release 4.2.

The environment comprises a windowing editor, dynamic source debugger and USL's C++ Language System Release 3.0. According to the company, the product can significantly reduce the operations needed to develop quality C++ programs.

Computer Innovations' C++ supports templates and uses a new compiler technology designed for the intel I486/Pentium platform.

A single-user license for C++ Version 3.0 costs $695.

▶ *Computer Innovations*
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Computer-aided software engineering

Michaels, Ross & Cole Ltd. has released Version 4.0 of the MRC-Productivity Series fourth-generation computer-aided software engineering tool for IBM's Application System/400. Enhancements have been made to the rapid application development, application integration, template programming and report formatting capabilities, the company said.

Users can integrate MRC-generated applications, including inquiries and graphics, reports and non-MRC routines and programs. The product offers a batch job stream facility, improved runtime performance for several report applications and context-sensitive User Interface Manager Help support.

Prices range from $4,000 to $65,000.

▶ *Michaels, Ross & Cole*
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Application development tools

Data Access Corp. has released DataFlex for OS/2 2.0, an application development system that includes an object-oriented fourth-generation language and a relational database management system.

Features such as application generators, an event-driven user interface and a complete set of tools and utilities to build mission-critical applications are also provided, the company said.

A multiuser license costs $1,450.

▶ *Data Access*
5753 Miami Lakes Drive, East
Miami Lakes, Fla. 33014
(305) 238-0012

Software Eclectics, Inc. has announced SE/One Version 3.2, a Cobol re-engineering, enhancement and understanding tool.

New features include PC Cobol processing and the ability to highlight date operations in a program with a D-RAY feature.

SE/One works within Microsoft Corp.'s Windows interface and can be used on batch or CICS programs, the company reported. The product also provides the capability to be used for Quality Assurance for new Cobol programs and for conversion and maintenance for older programs.

SE/One costs $290 per user and requires a PC running Windows 3.0 or greater.

▶ *Software Eclectics*
730 Starcrest Lane
Marietta, Ga. 30066
(404) 926-3331

Product shorts

Pure Software, Inc. has announced PureLink, a stand-alone incremental linker designed to reduce build times by more than 90% and speed software development in C and C++ environments. Cost: Starting at $10,000. Pure Software, Sunnyvale, Calif. (408) 720-1600. . . . Videotex Systems, Inc. has introduced Version 3.5 of T-Base, an imaging library that allows users to add document images and pictures to database management applications written in C, C++ and most Xbase dialects. Cost: $495. Videotex Systems, Dallas (214) 343-4500.

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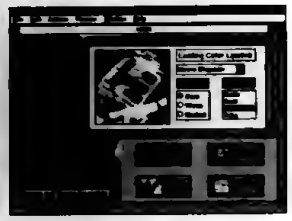

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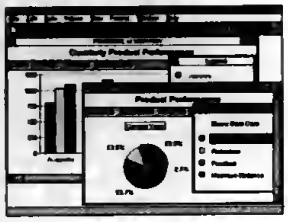

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▶ **Stanley Pharmaceuticals' David T. Howard** *says a little IS goes a long way: 'You don't orient yourself to traditional solutions'*

"OK, IS pros, listen up. Some of you are looking pretty decent out there. But I don't need to remind you that it's a new ball game, the competition is murder, and it's a long way to the top. The organization has a lot of money tied up in you and your equipment, so we need you to keep making those clutch hits.

"You're gonna need to work on the fundamentals, especially technology. And it wouldn't hurt if you brought some new paying customers into the ballpark and kept them happy. But remember: We want solid team players, not superstars.

"I assure you that anyone who ignores me will not be invited back next spring. If you have any questions, I'll be in the dugout with the laptop. Now get out there and PLAY BALL!"

By Joseph Maglitta

THE PEP TALK MAY BE IMAGINARY, BUT THE message is all too real: Top corporate bosses want more bang from technology, and soon.

Pressured by cost-conscious boards and customers, encouraged by a taste of success and enthused by a new hands-on interest in computers, top executives are more excited about — and more demanding of — information technology than ever before.

EXCLUSIVE SURVEY

A new *Computerworld*/Andersen Consulting survey of 203 chief executive officers, chief operating officers and chief financial officers found a growing belief that information systems should play a bigger, more potent role in U.S. corporations, especially in boosting market position and profitability.

"The faster you go, the faster you want to go, and the less forgiving you are when you're not going," says John B. McCoy, chairman of Banc One Corp., a 63-bank holding company based in Columbus, Ohio. "Some of our deals are pure technology."

Indeed, the most dramatic increase in this year's survey was among those who strongly agreed with the statement: "IS holds the key to competitive advantage for my organization in the 1990s." That percentage more than doubled during the past two years, to 57%.

Yet many top executives remain dissatisfied with huge IS investments, which now total hundreds of millions of dollars or more each year for the largest organizations, and are accelerating efforts to wring more zing from carefully targeted technology projects.

IS "has spent the last decade very aggressively selling us on the value of their functionality and purpose," says Luther F. Carter, executive director of the South Carolina State Budget and Control Board. "My role is to continue to ask them to push that envelope."

Fewer than half (48%) of the respondents said they are getting their money's worth from their organization's IS spending. While that's a slight improvement over 1989, it's all but unchanged since our last survey on the topic in 1991.

But wait, you say. Hasn't management been howling about performance and the high cost of computers since ENIAC? That's their job, for Pete's sake.

What's new is an unprecedented urgency to turn technology into dollars, or at least to have IS play a big — and growing — role in advancing

key corporate goals, promoting change and staying ahead of the pack.

"We're in an industry that is increasingly commodity pricing-driven," says Shawn Poole, CFO at Carolina Freight Corp. in Cherryville, N.C. "One of the differentiators is the technological support and information that we can provide to our customers."

IS gets good grades

The push to make IS a heavier hitter is understandable: This year, U.S. corporations will spend more than $200 billion on computers, telecommunications and related services, making technology by far the largest capital expense for business.

Despite this staggering outlay, clear payoffs are often maddeningly difficult to measure and achieve. No wonder top bosses are hesitant to pour unrewarded money into a technology black hole, especially when other departments are gasping for breath. A recent Deloitte & Touche survey of 500 companies found that IS budgets were expected to grow a paltry 1% in 1993.

Not that IS professionals are doing such a bad job. On the contrary, nearly two-thirds of respondents rated their organizations' IS functions as "very good" or "good." Add "average" rankings, and the figure climbs to 91%.

Bosses surveyed applaud the solid job IS is doing in raising responsiveness to external customers, shoring up company financial soundness, improving the quality of products and services and even driving innovation. Many acknowledge that technology is a must-have for mere survival.

"You need to have state-of-the-art application systems and capabilities just to stay in the game," says Belinda Morgan, head of operations at Bank South Corp. in Atlanta.

Still, a definite if sometimes fuzzy conviction persists that IS should be doing *more* to help the bottom line and grow the business. (Whether that's realistic is another matter, of course.) So corporations are pushing ahead to find the unique approach that will help turn their millions of instructions per second into dollars and market leadership.

It's no exaggeration to say that the outcome of these efforts will deeply impact not only IS managers and their profession but also entire companies and the computer industry itself.

▶ **Bank South's Belinda Morgan:** *'You need to have state-of-the-art application systems and capabilities just to stay in the game'*

New technology zealots

Ironically, until very recently, corporate heads were among the last big technology holdouts, especially CEOs in large companies. Many talked a good game but stubbornly resisted computers for themselves as too secretarial and time-consuming.

But top bosses aren't afraid of computers anymore. Our poll found 81% of top executives now regularly use PCs and/or terminals. That's nearly double the figure of four years ago.

Some executives, such as Finn M. W. Caspersen, CEO of Beneficial Data Processing Corp., a division of Beneficial Corp. in Peapack, N.J., are nearly inseparable from their machines. "I average about 200 [electronic-mail] messages a day," Caspersen says.

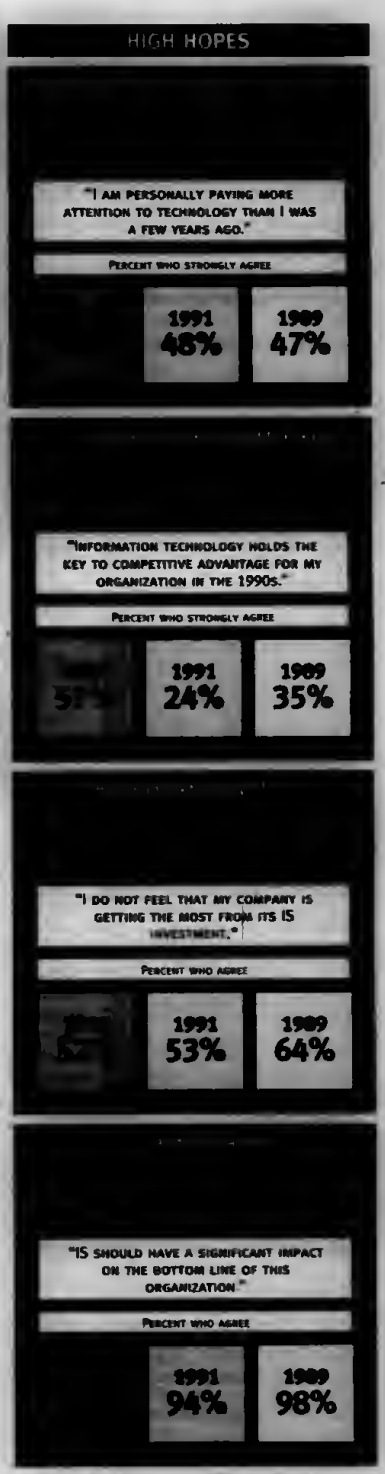
Another telltale sign: The number of executives with a "strong" interest in information technology rose 10% since our 1991 survey and now stands at 58%. Two years ago, 21% of executives could not even name a technology they considered key to corporate success. Today, that number has dropped to 7%.

Exactly how this growing hands-on use will affect future corporate technology direction is difficult to say right now. But it's surely another sign that the technology genie has fled the computer room forever.

Indeed, many nontechnical executives can now discuss groupware, client/server, imaging, rightsizing and other hot topics pretty smoothly. They may not know all the details, but they've got the buzzwords—and the message.

"You'd have to be brain-dead not to know the importance of technology," says the CEO of a booming Florida hospital chain now install-

Squeeze play, *page 88*



Source: *Computerworld*/Andersen Consulting telephone survey of 203 chief executive, chief operating and chief financial officers. Results represent percentage of all respondents surveyed.

Squeeze play

CONTINUED FROM PAGE 87

ing a 1,000-station clinical information system. Besides heavy spending and more hands-on use, several other factors are making technology hot in boardrooms, including a taste of success.

Many top executives speak proudly of past or current IS projects that speed customer services, slash turnaround times or simplify order entry and shipping, to name some favorites. In some cases, results have been dramatic.

At Beneficial, Caspersen boasts of speedy service enabled by IS. "If a customer calls up, we can make a credit check in about 60% to 75% of cases within 90 seconds," he says. Similarly, a joint venture between Beneficial, H&R Block, Inc. and the Internal Revenue Service uses CompuServe to process tax returns cost-effectively.

The bottom line, according to Caspersen, is this: "We are able to deliver products that we couldn't before and our competitors cannot now."

Source: Computerworld/Andersen Consulting telephone survey of 203 chief executive, chief operating and chief financial officers. Results represent percentage of all respondents surveyed.

How they're pushing ahead

So how are corporate leaders parlaying stronger interest in technology into a nice, flashy highlight for the company's annual report? Many are pushing aggressive actions that both embolden and terrorize IS departments and managers.

Among the key tactics for bringing more potent IS into the corporate mainstream are the following:

■ **Applying the payoff test.** The belief is stronger than ever that technology projects should have a definite payoff if they are to get funded. Bruce Marlow, COO of Progressive Insurance Co., typifies the new, tougher stance. "We're not going to do things because they look exciting any more," he explains. "If it doesn't improve service and reduce cost, it's not a good idea."

At Citgo Petroleum Corp. in Tulsa, Okla., CFO Steve Berlin says the trend is to reduce and maximize — not increase — computerization. "In some departments, instead of PCs-per-employee, we keep an eye on employees-per-PC."

Some executives have become pretty adept at making a little technology go a long way. Two years ago, for example, Stanley Pharmaceuticals Ltd., Canada's largest retail brand drug maker, scrapped an 8-year-old minicomputer and IS department in favor of a local-area network-based approach.

Today, David T. Howard, company president and general manager, credits the move with helping the North Vancouver, British Columbia, firm triple annual sales. Stanley's tiny two-person IS staff is now tackling forecasting and electronic data interchange systems.

■ **New metrics.** Bosses are also showing more interest in new ways to gauge technology's payoff. Three-fourths agreed that IS benefits are measurable; nearly all say they use a blend of "soft" and "hard" factors.

Many companies continue to search for better yardsticks to determine whether technology dollars are well spent. Instead of traditional cost and speed methods, they seek new metrics to assess the effect of IS on key areas — notably, customer satisfaction, user-friendliness, return on investment, data accuracy and information exchange among departments.

But there's a growing sense that IS should be judged as part of the whole project, not strictly on its own.

"When you try to measure the IS product in isolation," Marlow says, "that's an impossible task. But if you measure its impact on the total business process, it becomes fairly simple to see. Either your transaction cost went down or it didn't. Either your service level went up or it didn't."

▶ **Citgo's Steven Berlin** *says smart, mature companies are moving to decrease the amount of computer equipment that rolls in the door*

■ **Outsourcing.** While interest in farming out some or all of a company's technology functions seems to be leveling off, it's far from dead, especially in big organizations.

Forty-one percent of firms polled now do some IS outsourcing — a modest 7% rise from 1991. One-fourth of the companies not currently outsourcing say they plan to do so.

By hiring out mundane, resource-gobbling tasks such as payroll, billing, maintenance and even programming, executives say they hope to free costly IS staff members for higher payoff work. But there's an even more basic and compelling reason: saving money.

EXCLUSIVE SURVEY

Bank South has outsourced computer operations to IBM's Integrated Systems Solutions Corp. unit since July 1989. "It's worked wonderfully," Morgan says. She declines to enumerate savings but says outsourcing lets the bank's 80-person IS staff focus on strategic IS planning, telecommunications and applications development.

■ **Re-engineering.** Undoubtedly the biggest hope of transforming IS from utility player to an all-star rests with business process redesign, or "re-engineering."

Through the high-profile proselytizing of consultant Michael Hammer and glossy articles in *Business Week*, *The Harvard Business Review* and elsewhere, "re-engineering" has become a familiar word in many corporate boardrooms. Some 71% of respondents said their organizations are now engaged in business process redesign. Few expect technolo-

Title tales

Executives usually saw eye to eye, but there were some differences.
•PC use: CEOs averaged only about 64% use, roughly 20% less than other titles.
•Linkage: CEOs (64%) thought IS alignment was "very closely linked" with business, compared with COOs (51%) and CFOs (52%).
•Measuring IS: More CEOs (82%) and COOs (86%) said IS could be measured, compared with only 64% of CFOs.

Almanac

IS performance: Wholesale firms had the most "very good" ratings for IS (50%), followed by transportation (42%) and insurance (34%).
Competitive advantage: Most agreement was in transportation (86%), followed by health care (69%) and consumer products and government (66%).

gists to lead, but most bosses want IS to show up early and play hard the whole game.

These diverse efforts have done much to promote widespread popularity of "cross-functional" teams — groups of professionals from sales, human resources, marketing, IS and other disciplines that unite for specific projects. Many executives and consultants say such teams offer the brightest hope yet for finally fusing IS with business goals.

Carolina Freight now uses the team approach and loves it, Poole says. "It's not one of these things where operational guys dump the problem onto the data processing guys and they go back into the laboratory and work on it for awhile and come back and say, 'Here's your solution.'"

For this kind of collaboration to work, executives insist that IS pros must be solid team players, not oddballs or prima donnas. "I don't like superstars," declares Guenter Rohrmann, CEO of Air Express International Corp., echoing a popular sentiment. "Superstars are people who come up with ideas and then give you something you can't use." Like most chiefs, Rohrmann says he values solid day-to-day performance above all.

■ **More control of IS.** Management in many firms is also trying to better harness corporate technology by taking more direct command of IS functions. Today, nearly as many departments (36%) reported to CEOs, COOs or business unit heads as to CFOs.

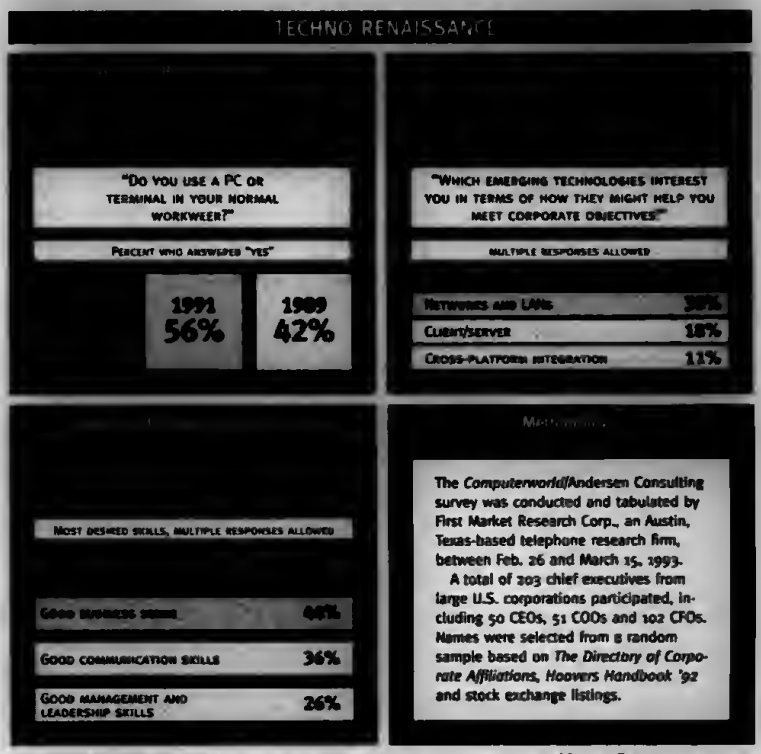
In some cases, including 3M Co. and Citgo, CFOs have replaced CIOs who retired, were fired or were reorganized out of jobs. Berlin says, "Some of that is the reaction to the realization that [IS] not the be-all and end-all." The trend is expected to continue.

■ **Firing CIOs.** Executives aren't shy about taking their final recourse: firing CIOs.

Four years ago, the big question in IS circles was whether CIOs would make it to the executive suite. Today, it's whether they'll make it to the end of the year.

In case you need reminding, top technology executives are being booted in record numbers. Accord-

Squeeze play, *page 91*



Source: Computerworld/Andersen Consulting telephone survey of 203 chief executive, chief operating and chief financial officers. Results represent percentage of all respondents surveyed.

Computer industry chiefs: 'Don't give up yet'

■ Computerworld recently asked the heads of the some of the world's largest computer companies to address top executives' concerns about the payoffs of the billions of dollars in information technology spending.

Charles B. Wang, chairman and CEO, Computer Associates International, Inc.

"I think there's a fundamental disconnect between CEOs and CIOs. It's an issue which the business community is starting to address. CIOs as technology people don't think they're an integral part of the business. If that's the case, you end up with a disconnect. CEOs don't draw in CIOs to make business decisions, and CIOs don't draw in CEOs to make technology decisions.

"I think there's really one benefit [of IS]: The ability for a business to have a competitive advantage. Certainly computers have changed the way we process and use information. With that, obviously, you have a better bottom line."

Interview by Thomas Hoffman.

James Ambrahamson, chairman, Oracle Corp.

"CEOs who have been around have seen an ever-increasing requirement to invest. Their budgets are going up, but they are unable to relate that budget directly to better IT systems. They don't see a direct correlation and are asking, 'Can someone show me that this extra million dollars is going to earn me a cost savings somewhere else?'

"Second, every chief executive feels, these days, that he has to do quantifiable strategizing. They feel they can get better data and better strategy with all this automation, but the problem is that the information is not available quickly from their systems. It's easy to get data but hard to get information. They're not able to transform data and apply it to strategic decision-making.

"As people downsize, they can see that going from two data centers to one saves X

Charles Wang

number of dollars. But while other kinds of IS payoff should be measurable, they aren't, always. To make measuring easier, companies have to define what they want out of the systems and enforce discipline. Adopt zero-based IS budgeting, where a CEO says, 'You show me the impact of this spending or we're not going to spend more next year.'

"There's another [benefit]: strategic thinking. This isn't very measurable, but there is other fallout from good IS. For example, using IS effectively might allow a company to discontinue what it discovers is an unprofitable line of business. Or, a company might find new products or services that are only enabled by information services. *That's* where the big payoffs can occur, in the right combination of human thinking and IS."

Interview by Kim S. Nash.

Jim Manzi, chairman, CEO and president, Lotus Development Corp.

"To get the most from their intelligent technology investment, organizations must reexamine their concepts of business systems and redefine what is strategic. The focus must be on developing business systems which will increase market share, retain customers and increase market leadership.

"The promise of this reevaluation is that it can meet fundamental needs in new ways, ways that bring greater coordination and information sharing even in a disconnected world and that ultimately lead to real, tangible gains.

"I believe that payoff is measurable, especially for cases in which information technology adds value by applying itself to do entirely new things: in other words, to do entirely new things rather than downsizing old things.

Jim Manzi

"To gain a measurable payoff from information technology, companies must take a hard look not just at the cost of their technology investments, but also at whether the cost can be justified by real, tangible economic gains."

Interview by Jodie Naze.

Reto Braun, president and COO, Unisys Corp.

"A lot of sales over the past 20 years have been made because of the buzzword 'technology.' User companies are watching their spending carefully, and buzzwords won't cut it anymore.

"What we have done is measure the savings of labor for customers, but that is not the measure of the future. The savings in the future will be time savings and reductions in time to market [as IS applies to end-user products and services]."

Interview by Thomas Hoffman.

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Squeeze play

CONTINUED FROM PAGE 89

ing to the new Deloitte & Touche study, CIO turnover at companies with revenue of $5 billion or more hit 25% in 1992. One out of every three CIOs, according to the firm, took over for a predecessor who was fired.

Fortunately, steering committees, long-range planning and other efforts to better align IS and business seem to be paying off: A full 91% of those executives polled said their company IS and business strategies are "very or somewhat" linked.

Top executives may not know exactly what they want or how to get it, but their expectation of you is clear: Be a technology expert.

The ability to understand new products and technology directions was cited by 59% of respondents as *the* most desirable skill for IS managers, followed by specific knowledge of the company business.

General management skills, such as good communication, leadership ability and organization, were a strong third.

This renewed focus on technology represents an important change in direction from the mid-1980s, when IS people constantly exhorted staff to "learn the business!" While that's still a necessity, executives say neck-snapping changes such as client/server, object orientation, groupware, mobile computing and others have swung the pendulum back to basics. "You're not looking for textbook- or cookbook-type solutions or solutions that are in the ads from computer makers," Marlow says. "You need somebody who can say, 'I can understand what you're trying to do here with these customers and these workgroups, and here's a unique combination of technologies that might really work for you.'"

The message is clear: Top IS managers must become switch hitters, equally adept at technology, business and general management.

In the trenches

Direct report: The CFO is still the most popular choice for a CIO's boss, with 39% of the respondents holding that position. Overall, 15% report to the CEO and 17% to the COO.

Leaders: Wholesale companies lean more toward having IS report to the CEO (50%) than many industries; transportation and financial services have the next highest amounts, with 43% and 36% of IS divisions, respectively, reporting to the CEO. Government comes up last, with only 6% of their IS heads reporting to the CEO.

Game over?

Say you're an IS manager who's smart and motivated enough to evolve into a new kind of techno-brilliant team player. What then?

Better straighten your cap because executives say they have no intention of easing up. In fact, many warn that pressure will rise as technology becomes a bigger and more important part of corporate strategy.

"Anything we can come up with is pretty easily duplicated within six months to a year," says Carolina Freight's Poole. "So you've got to continue coming out with more innovations."

It's the dustiest truism in business and sports, but some observers say that situation offers huge challenges and possibilities for IS professionals.

Bane One's McCoy notes there are worse places to be than in a highly pivotal function such as IS. "If I could be on any side of the business, I'd rather be on that side than saying, 'Gee, I don't think they need us anymore — they never call.'"

Still, troubling trends loom. A growing number of organizations, including Air Express, Banc One and Progressive, say it's easier to train nontechnical people in IS, and they have chosen technology chiefs from operations ranks. Others are likely to follow suit.

"We can take line people and make them technology people," McCoy says. "It's harder to take technology people and bring them into the line." Some observers suggest IS will split into two classes: business specialists and what one COO termed "technical barbarians."

One thing is clear: IS professionals have no future if they don't learn to think like the state of South Carolina's Carter. "IS sees the process [of building a system] as an end," he says. "I see it as a means to an end."

After years of hard work, IS pros have finally made it to the major leagues. Whether they become Hall of Famers or has-beens will be decided in the next few seasons.

Batter up. ■

Carol Hildebrand, associate editor of management, and Ellis Booker, senior Midwest correspondent, contributed to this report.

Don Monaco

The CIO's new clothes

Clawing a competitive edge out of today's extremely challenging marketplace isn't easy, and the last people to deny that should be CEOs.

But they still want more. The *Computerworld*/Andersen Consulting survey finds that less than half the respondents believe they are getting their money's worth out of their IS investments.

Yet more than half agree that "IS holds the key to competitive advantage," and nearly all agree that "IS should have a significant impact on the bottom line of this organization."

While this disparity may be discouraging, it also opens wide the doors of opportunity for those creative executives who grasp their crucial role in re-engineering their organizations — and who have the creativity and ability to take their role beyond its typical boundaries.

Perhaps before you begin to think about redefining or expanding your role, it would make sense to step back and consider how you define "value." It would not be uncommon for most CEOs, without giving the question extensive thought, to relate value to their organization's bottom line.

But the bottom line cannot always be dissected and analyzed as a solely financial element. Successful organizations realize that their customers hold the key to the company's bottom line. This may be among the reasons why more than 70% of the survey respondents said they are re-engineering to make the drastic improvements necessary to succeed in today's volatile marketplace.

And this is where you, the IS executive, enter the picture. No one else is better positioned to assist CEOs in ensuring that technology is applied innovatively so that an organization's re-engineering efforts result in the integration of its strategy, business processes and people.

EXCLUSIVE SURVEY

If an organization is considering re-engineering, or if it has already begun the process, the time is ripe for IS executives to help their CEOs realize that IS performance should not be gauged solely on traditional speech and cost measures. Instead, it should be gauged on a more intangible element — how technology can be used to help better serve the customer.

It is also the most opportune time to start changing the long-held perception that IS executives lack crucial skills — business knowledge, interpersonal communication skills and the ability to apply current technology to address business.

Redefining the CIO role

How do you tell if re-engineering is being considered? Several sure tip-offs include significant changes in customer demands, rumors of rightsizing or downsizing and significant turmoil or upheaval in the organization's industry.

If any of these indicators are obvious, you must take the initiative to familiarize yourself with your organization's position on re-engineering by talking with senior executives and others in the know.

You must go beyond the typical boundaries associated with IS and investigate what re-engineering projects are in the queue or are being conducted in the organization.

You must ask questions such as: "How will these plans/actions ensure that we gain the ability to achieve continuous improvement? What abilities do we have in-house that could be put to use on true re-engineering activities vs. day-to-day operations?"

The next step is to become an adviser to the CEO, providing sourcing guidance and options, helping to determine where focus should be placed and how value can be added to the organization — to its products, services and customers. How? Finding the answer to this is unique to each company. But some of the following suggestions may help guide the way:

- Involve yourself in ongoing planning and implementation processes, specifically in regard to how the most appropriate technologies can be implemented across the organization.
- Become heavily involved in deciding on any outsourcing — be it IS or a line business unit.
- Actively begin to build relationships with current and future customers and suppliers.
- Become more aggressive in sharing expertise by speaking in layman's terms about customer demand, increasing productivity and improving flexibility.

In effect, you must become a judge of where the organization should turn to ensure access to the necessary skills and capabilities that are not found in-house.

You can help bring an organization's business processes into focus and determine how best to eliminate or outsource what falls out of the frame. This will close the process gap by forcing organizations to manage their business processes in a new way.

By recognizing and accepting that drastic improvements can be made by changing the focus of strategy, organizations will be better able to see how they can compete in the global marketplace, maximize their return on investment and productivity and keep their clients happy.

Monaco is managing partner at Andersen Consulting.

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CEO Interview

'Oz' Nelson

Count on technology

After a long decade, the chairman of United Parcel Service makes technology pay off big

After watching rivals Federal Express Corp., Roadway Express, Inc. and others use information technology to erode what was once nearly a monopoly, United Parcel Service, Inc. spent much of the last decade getting its technological ship in the air.

Between 1986 and 1991, the Atlanta-based carrier invested more than $1.5 billion in information technology. Installed PCs skyrocketed from 750 in 1985 to more than 56,000 now; CPU capacity jumped sixfold.

The payoff is starting to show up on the bottom line. The $16.5 billion, privately held carrier has watched its profitability continue to rise — even in a sluggish market. Net income last year was $765 million, a 9% increase over the previous year.

In February, Nelson — nicknamed Oz by a childhood friend in Kokomo, Ind. — was awarded the 1993 Excellence in Technology Award by Gartner Group, Inc. and The Conference Board.

Nelson spoke recently with Computerworld *Mid-Atlantic correspondent Thomas Hoffman.*

Kent 'Oz' Nelson, *55, joined UPS in 1959 and entered its executive ranks in the 1980s. He has been chairman and CEO since November 1989*

■ On IS budgets

We don't have a budget. Each project comes in individually, and it has to stand on its own merit. If it stands and we've got money, then I don't mind affording it. You have to have enough of those payback projects and efficiency projects or business development projects to get that revenue in to allow you to continue to grow.

As we find those, we'll keep adding people. If we don't find those, we'll hunker down and do the things we need to do to run a business and to keep competitive.

■ On project paybacks

We went through a period in our change to information technology where we could drum up so many projects easily that had paybacks. Now our corporate capability is so much that we can drum up more than what we can afford to do.

Now we're going through with a finer tooth comb and saying, "Yeah, that's a good project, and it will save us money," but we can't keep adding 20% to 25% more IS people forever. We've got a capability now; now, we've got to get smarter. We've knocked out a lot of the easier ones. The [IS projects] now are much tougher.

■ Impact on profitability

[We've focused on] developing the kinds of projects that are important to the company, ones that either had strong customer/business development motives, cost savings or efficiency motives behind them. There weren't any projects that went through there that didn't pass that test.

■ IS and competitive advantage

Federal Express market share has dropped for the past several years. And that's not because they aren't doing things well; it's because of the increased competition. There was a time when it was just us and the Post Office for ground services. Now there are a lot more people out there. The thing we had to do to grow in air was to convince the shipping public that we could provide all the services that the leader — Federal Express — has been able to provide. And that can only be done through technology.

We already had an efficient operation with reliable service. They weren't any faster or any more reliable than us, but their information system was more extensive.

■ Characteristics of a solid manager

You like to have a hands-on manager, not somebody who sits in his office and plots and schemes, but someone who is regarded by the organization as someone who knows what the heck is going on, knowing what our business is.

I don't lean toward a heavy technology guy. People can learn that. I think it's got to be a person who's hands-on and knows the business. And it has to be someone who can work well with other top people. It's a team system. It has to be somebody who's flexible because technology keeps changing.

That person has to know that he has the support of top management, from the chairman and CEO. They have to have the confidence to go out there and make decisions.

The [business divisions] can have a tremendous effect on what projects we're going to do, but when we get down to doing them, there's only one gatekeeper.

■ IS compared with other functions

It's hard to put anybody under more pressure than sales and marketing right now, but if there is anybody, it's probably IS. I think they're under more positive pressure. They're doing more, and they're getting more help doing it from the different functions. I think it adds up to more pressure, but I think it's the right kind of pressure.

Re-engineering: just first step

By Rosemary Cafasso
CAMBRIDGE, MASS

Chances are, you are up to your ears in a re-engineering project that's one of the most grueling efforts your company has undertaken.

So brace yourself: One of the consulting firms that originated the concept is saying that business process re-engineering might not be enough.

"There are a lot of companies that embark on an aggressive re-engineering effort and then find the customer still isn't happy," said Fred Wiersema, vice president of CSC Index, Inc. based here. "Analyzing things to death and task forces aren't going to get you there."

There is a more competitively focused organization that zeros in on what value they can deliver customers, according to Wiersema and collaborator Michael Treacy, president of Treacy & Co. and a CSC Index associate.

Both delivered this message earlier this month at CSC Exchange, an annual executive conference sponsored by Computer Sciences Corp., which owns CSC Index and other services businesses. And both consultants said too much focus on re-engineering could be a mistake. "The cure is not re-engineering alone," Treacy noted in a CSC Exchange presentation. "It is a component to a solution."

Shining stars

According to Jim McKelvey, vice president and controller of Springs Industries, in researching the competitive focus issue, CSC Index determined that about 40 companies in the Fortune 1,000 are truly stellar examples of highly focused organizations, including Coca-Cola Co. and Wal-Mart Stores, Inc.

Treacy said that when it comes to defining a company's competitive focus, there are really only three lines of attack from which to choose: operational excellence, in which a company focuses on efficiencies and producing its product as cheaply as possible; customer intimacy, which calls for premium service and establishing relationships with customers; and product leadership, in which a company produces the most superior product in its market.

The goal: Select a priority, focus on it and create an organization that supports it.

Take The Home Depot, Inc., a retailer of home supplies and improvement products that is based in Atlanta. CSC Index cites Home Depot as an example of a success in the so-called "customer intimacy" category.

Each Home Depot store has autonomy, and store managers make decisions on customer issues and market changes. Andrew McKenna, senior vice president of information services, said his staff focuses on providing tools to help individual stores work with their own market data and customer trends.

As an example, information systems has installed a customer traffic system in each store that tracks customer volume and then allows managers to schedule staff based on that data.

Yet, some CSC Exchange attendees said that while the theory of a sharp competitive focus sounds sensible, it may not be so easy to implement. Everyone wants to be focused, attendees said, but sometimes companies must tackle competitive issues on a number of fronts.

Jim McKelvey, vice president and controller of Springs Industries, Inc., said companies often have no choice but to address multiple issues at once. "It is hard to do because they are somewhat in conflict," McKelvey said. "We want to be a low-cost producer and a leader in customer service. You've got to run manufacturing efficiently and keep costs down, and that can be in conflict with customer service."

Practical projects praised

By Nell Margolis
WASHINGTON, D.C

When the National Managed Healthcare Congress handed out its second annual MIS Summit Awards for Information Technology Excellence recently, pragmatic technology emerged as the big winner.

Overall systems design and implementation laurels went to Kaiser Permanente's Ohio Region's Encounter System. The 20,000-member health maintenance organization office bought a coding software package, married it to underused technology already on board and built a database of diagnoses, medications, allergies and immunization information primed for easy access and minimal cost.

"There are two schools of thought here, and one favored an everything-at-once, workstations-for-everyone implementation," said Dr. Allan Khoury, associate regional medical director at Kaiser and one of Encounter's spearheads. "But that's sort of a leap of faith — everybody's talking about it or in the middle of doing it, but has anyone really *done* it?"

Kaiser's Allan Khoury: *Avoid the glitz and go for the guts*

Harvard Community Health Plan walked away with the Clinical Applications honors for its Integrated Practice System (IPS), a fully automated clinical system centered around an on-line medical record that allows every person who interacts in any way with a patient to have up-to-date data and computer-aided guidance and advice. While IPS was designed for maximum portability across platforms, the initial implementation has doctors using Apple Computer, Inc. Macintosh II workstations, hosted by a Digital Equipment Corp. VAX 6000 minicomputer.

Southern California Edison Patient Services topped the Innovation category with a Macintosh software program that supports all aspects of SoCal Edison's Managed Care System — utilization review, case management, bill audit and quality assurance — across a 22-user local-area network.

"The technology that links doctors together or automates clinical records — functions that will make huge differences in the availability, quality and cost of health care — has been around for a long time," said Joe Miller, a principal at Wakefield, Mass.-based health care information systems consultancy Charles J. Singer & Co. But there have been some hefty obstacles in its way: "One of the biggest of which is that only about 60% of all the doctors out there even have computers."

Khoury is among that 60%. Nevertheless, he is an outspoken advocate of the view that medicine will best be served by technology if health care professionals resist the lure of the cutting edge and concentrate on the possible.

"We needed a flexible, multifunctional database . . . but we also needed a system that doctors were going to be able and willing to use. And we simply could not consider systems that would cost millions of dollars and conceivably increase our rates by 2% to 3% for several years."

That's why Kaiser avoided the glitz and went for the guts, Khoury said. Among other decisions, "We limited our collection of data to diagnoses, medications, allergies, procedures and aspects of preventative care," he said. Free text was bypassed as too costly for the limited use it would get. Similarly, the Encounter team opted for a paper-based system; the familiarity, Khoury said, made for "optimal physician acceptance."

Taking what some technoenthusiasts are likely to see as the low road not only is the quickest route to getting medical personnel up on the system, Khoury said, but it also most immediately serves the greatest number of critical patient needs. For instance, he said, tracking and messaging features long taken for granted in business offices stand to make giant strides in the health care arena.

Expect to hear Khoury's sentiments echoed frequently in the coming year, Miller said. He foresees health care organizations increasingly coming to perceive baby-stepping into technology as the most effective way to achieve meaningful results.

Executive Track

John R. Crary recently took over as vice president of information systems and services at Southfield, Mich.-based aerospace and automotive manufacturer **AlliedSignal Automotive**. Crary, who formerly served as group director of ITT Automotive's IS operations in Auburn Hills, Mich., is charged with leading his new company's efforts to provide world-class manufacturing and information systems and services. He replaced AlliedSignal IS Vice President Martin LaBrecque, who left the company.

At publisher **Houghton Mifflin Co.** in Boston, **John E. Tyler** is in place as new senior vice president and chief technology officer. Tyler most recently served as vice president of IS at *The Seattle Times*. In his new position, Tyler is responsible for internal data management as well as for integrating technology into Houghton Mifflin's publishing operations.

Robert A. Manson, who has served as **Stop & Shop Supermarket Co.**'s vice president of IS since 1985, has been promoted to the position of senior vice president of IS. A 20-year IS veteran of the Quincy, Mass.-based supermarket chain, Manson will continue to report to Senior Vice President of Administration Donald J. Comeau.

New York City-based information technology consulting firm **Automated Concepts, Inc.** has appointed **John M. Jangilas** to the post of senior managing consultant of the Chicago region's Client/Server Enabling Group. Jangilas, a distributed systems specialist, most recently plied his talents for seven years at **American Airlines**, where he worked on the Apollo reservation system.

William Sumner has been named senior vice president of IS at Culver City, Calif.-based **Sony Pictures Entertainment**. A two-decade veteran of the information technology industry, Sumner most recently served as senior vice president of information systems at **Bullock's** and **R. H. Macy and Co.** At Sony, he will be responsible for worldwide information systems as well as working closely with top management to develop strategies for furthering the use of computer technology.

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The business environment of the '90s challenges organizations to work faster, better, and at a lower cost than ever before. Styles of computing that suit large, monolith, routine batch jobs cannot sustain the free flow of information and resources required by businesses today.

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- **Worldwide consulting, training, and systems integration professionals**
  Our experts work with you to manage and balance the people, business, and technology dimensions of distributing information throughout your business.
- **Multivendor integration**
  You choose the best components to serve your business — from desktop to data center. We can integrate and support almost any client or server your company is likely to own now or in the future. Plus, we have packaged these capabilities into products that deliver integration and interoperability right out of the box. For example, Digital's Network Application Support (NAS) capabilities, such as PATHWORKS, enable you to interconnect multivendor systems and achieve a free flow of information across platforms, sites, and groups.
- **Unbounded capacity at far less cost**
  Utilizing the world's fastest 64-bit RISC microprocessor, our Alpha AXP family of open server and desktop systems give you unbounded capacity — at a fraction of mainframe cost.

Take Advantage of Our Experience

Digital pioneered moving information out from the data center to work groups — whether they're in the same office or around the world. We'll help you achieve the most flexible and cost-effective approaches to your information requirements — today and tomorrow.

For more information on Digital's computer downsizing solutions, call 800-332-8228. ■

What drives companies to move to more cost-effective computing environments?

Two reasons.

Not only do you want to **increase the payback** *of your information technology dollar, but you're also looking to* **increase the productivity** *of your frontline professionals.*

Digital helps you do both.

Libbey-Owens-Ford Profits from Digital's Downsizing Solutions

Libbey-Owens-Ford Company's Auto Glass Replacement (AGR) Business Unit has added 69 service centers since 1988, and plans to establish 100 by the end of 1993. This continent-wide service network — including AGR's three giant depots — supplies local auto glass replacement shops that serve customers throughout the U.S. and Canada.

Building market share with this fast-growing service challenges AGR to meet market demand for quick response and competitive pricing by dramatically cutting distribution time-to-market and cost.

These goals drive AGR's move from an in-house application on an IBM mainframe to a Digital client/server environment — an environment that provides nationwide, distributed, real-time inventory management.

Connecting the service centers, depots, and headquarters, the Digital environment integrates and distributes AGR's preferred application packages: Distribution Management from McHugh Freeman Associates, for real-time inventory control throughout the supply chain; and DAI from Distributed Architects Incorporated, for integrated resource planning and order processing in all service centers.

VAX 4000 systems, the field office servers, will link to an Alpha-ready VAX 6620 system at AGR headquarters. "The power of Alpha AXP provides the right, high-performance match for our business strategy ... at a far lower cost than a mainframe approach," says Rick Wagner, Senior Manager, IT, Libbey-Owens-Ford.

Digital Helps The Brookings Institution Save over $1 Million

With the help of Digital's computer downsizing solutions, The Brookings Institution's Social Science Computation Center (SSCC) has saved a total of $1.7 million over a six-year period. It spends less annually in areas such as computer maintenance, software, and peripherals.

Digital has been providing Brookings with computing power since 1970 — with the SSCC adopting VAXcluster system technology. But, as PCs assumed an increasingly important role at Brookings, the organization was faced with a dilemma. PC and VAX users needed to collaborate and communicate. Brookings needed to maintain both systems and cut costs at the same time.

The solution? Lower-cost and higher-performance Digital computers are servers to the growing base of PCs and Macintosh systems at The Brookings Institution. These desktop units are integrated with each other and the Digital server via Digital's PATHWORKS networking.

The SSCC has upgraded the VAXcluster system that functions as the server several times, moving smoothly from the VAX 8650 computers down to VAX 4000 systems. Now, with the lower maintenance and electricity costs, Brookings will recoup its equipment costs in two years.

States SSCC Director Jane Fishkin, "The SSCC accomplished this computer downsizing without endangering or impairing the flow of Brookings' most important asset: information."

The ALPHA AXP ANGLE

Digital's Alpha AXP Solutions Take the Worry out of Computer Downsizing

If you're nervous about the [illegible]spect of computer downsizing — relax. Digital's Alpha AXP solutions give you the performance of a mainframe at a fraction of the cost. Plus, you can breathe more easily for a long time to come. These no-risk solutions will pay off today and tomorrow.

Business pressures — they surround you. Pressure to find more cost-effective, flexible computing environments that will improve your bottom line. Pressure to increase IT impact but reduce cost. Pressure to implement a computer downsizing solution that won't sacrifice the security, reliability, and management disciplines of your mainframe. Is there any good news? Yes — Digital's Alpha AXP systems take the pressure off.

Take Advantage of 21st Century Computing Today

Offering the fastest performance and the best price/performance in the industry, Digital's Alpha AXP systems utilize the world's fastest single-chip microprocessor, and are the first to take advantage of 64-bit RISC design. This new generation of systems enables you to run today's applications dramatically faster at lower costs and allows you to access very large databases.

Plus, unprecedented performance and capacity make the Alpha AXP architecture the platform of choice for next-generation applications employing such user-oriented technologies as video imaging, artificial intelligence, and multimedia.

A Universal, Open Platform Gives You Freedom and Choice

The design of the Alpha AXP platform makes it easy for you to downsize using the best operating systems available today — as well as the best systems of the future. Specifically, this 64-bit platform offers you a choice of the three most significant software environments in the industry for distributed computing, including:

- Microsoft's Windows NT, an emerging operating system standard for Windows, on the fastest, most scalable platform in the industry
- DEC OSF/1, the first and only 64-bit unified UNIX operating system, supporting all major UNIX implementations
- OpenVMS, the highest-functionality operating system in the world, with leadership data integrity, availability, and scalability for distributed production systems.

Our open technology isn't the only pathway to freedom. Digital's open business practices are key in enabling us to provide comprehensive Alpha AXP solutions. We have formed strategic business partnerships at all levels — including hardware, software, peripherals, and applications — to assist the many leading vendors worldwide who are making Alpha AXP computing the new industry standard.

See the Value of Your IT Resources Increase

You can choose a solution for any size task or job from Digital's family of scalable Alpha AXP systems — from desktop to data center.

Select the Alpha AXP processor that will allow you to enhance your current computing investment. Unlock your mainframe by offloading dynamic data to faster, lower-cost Alpha AXP servers. Increase user access to critical information and defer costly mainframe upgrades. Or transform your standalone PCs into clients within an enterprise information system. Use Digital's Networked Application Support (NAS) products to turn your multivendor environment into a single, distributed system.

Balancing Business, People, and Technology Issues

Digital offers distinct advantages in making the process of downsizing to distributed computing work for you.

We have the experience. In one sense, Digital pioneered the computer downsizing movement. From early on in our history, we've moved information from the mainframe to minicomputers to desktops — and we've been helping other organizations take advantage of our experience in distributed computing ever since.

We provide a comprehensive family of services worldwide, including business consulting, outsourcing, and systems integration capabilities. These services make the transition to the open environment of Alpha AXP fast, easy, and complete — balancing the business, people, and technology that make your business competitive. Our unique NAS capabilities in multivendor networking and systems management lead the industry. And, with the in-depth applications expertise of our business partners, we provide you with complete business solutions.

For more information on Digital's computer downsizing solutions, call 800-332-8228. ■

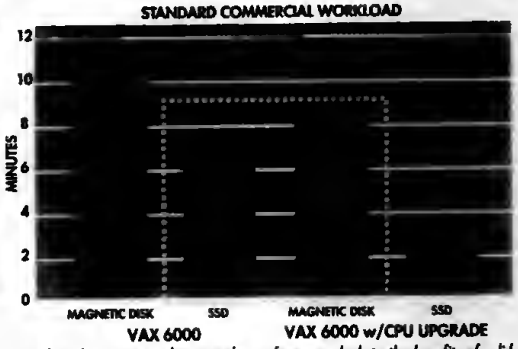
Digital's ESE50 Solid State Disk

For proof of Digital's ongoing commitment to supply industry-leading price/performance solid state disk drives, look no further than the ESE50. The price of our highest-performance mass storage device has been reduced up to 27 percent.

No special deals. No limited-time offer. Just an ongoing commitment to good business practices. Digital continues to answer your solid state disk price/performance needs by finding ways to drive technology prices down — and pass those savings on to you. Our new, lower-prices are proof of our success. Take a look at these ESE50 solid state disk price reductions:

Old Price	$55,000	$165,000	$138,000	$215,000
New Price	$40,000	$130,000	$110,000	$180,000
Percent Savings	**27%**	**21%**	**20%**	**16%**

Lower entry prices allow ESE50s to be used in a wider range of I/O demanding applications — good news for many industries. From financial trading and telecommunications to manufacturing, retail, pharmaceutical, and scientific environments, the ability to achieve consistently fast access to expanding sources of data is a competitive necessity. Designed to meet this need, the ESE50 offers the ability to access your most time-critical data in 0.25 ms — up to 100 times faster than magnetic disk.



When slow access to data impedes performance, look to the benefits of solid state disks. Benchmark results show that the addition of solid state disks provides more improvement in I/O wait.

So, what does all this mean for your business? Faster I/O access can dramatically speed up productivity, accelerate product time-to-market, increase revenues, and reduce organizational operating costs.

Easy to Use, Easy to Implement

Digital's ESE50 lets you achieve maximum system performance by matching the accelerated power of today's Alpha AXP, VAX, and VAXcluster SDI systems with exceptionally fast access to your system's time-critical data.

And, just like a magnetic disk, these solid state disks "plug and play" in any SAxx storage array cabinet — without application or operating system modifications. What's more, the ESE50 provides the highest data availability of any solid state disk through the use of its unique integrated Data Retention System and dual power supplies, all within the magnetic disk-sized enclosure.

For all your I/O needs — today and tomorrow — depend on Digital's family of solid state disk products for industry-leading performance and price/performance. For your FREE copy of Digital's 1993 edition Solid State Disk handbook, call 800-DEC-INFO (800-332-4636), ext. 985. ■

Making the Right SSD Choice

Feature	ESE50	EF5x
Interconnect	SDI	DSSI
Access Time	0.25 ms	0.25 ms
Maximum I/O Throughput	1,800 I/O	800 I/O
Capacity	120 MB–1 GB	107 MB–267 MB
Availability	Highest	Exceptionally High
Form Factor	8-inch, half-rack	5¼-inch

Before choosing a solid state disk, identify your most critical business application needs. Then, use this chart to help you select the solid state disk that's best suited to answer those needs.

People Are Talking...

"Digital's SOLID STATE DISKS ADD DOLLARS to Your Bottom Line"

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When client/server *isn't* right

YES, THERE ARE SITUATIONS IN WHICH CLIENT/SERVER WON'T DO. IF YOUR COMPANY HAS LOTS OF USERS AND MODEST COMPUTER POWER NEEDS, DON'T WASTE YOUR TIME AND MONEY.

Andy Levine

By Michael Kennedy and Andrew Gurbaxani

You'd never be able to tell this from advertisements and conference speeches, but client/server isn't the correct answer to every question. It doesn't save you as much over mainframes as you might think (see chart below), nor is it necessarily your best bet for enterprise connectivity.

This is not easy news for information systems executives to carry back to business managers who are hoping for a panacea, but someone has to be the voice of reason amid the hoopla.

Mainframe costs on a par with client/server? Hardly seems possible, given the fervor with which vendors are selling downsizing as a way to cut, cut, cut costs. But for some, mainframes may certainly be the economical way to handle information.

If your organization has lots of terminals and low computer power requirements, staying with a mainframe makes sense (see chart page 101). For example, an airline reservation system with thousands of agents and relatively modest computing requirements works well in a mainframe environment, as does a customer service center that uses computer power to answer billing questions.

Conversely, client/server wins out when computing power requirements are high and the number of terminals (workstations) is small, as in the case of a computer-aided design and manufacturing operation employing a handful of engineers with huge computing requirements.

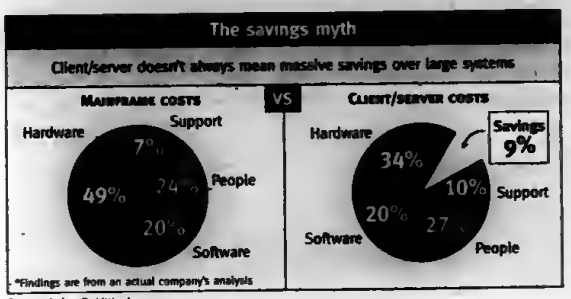
It all boils down to numbers (hardware and MIPS numbers, that is). Specifically, a dumb terminal costs about one-third as much as a workstation ($500 vs. $1,500, respectively), while mainframe million instructions per second (MIPS) cost about 100 times more than workstation MIPS ($50,000 vs. $500).

Keep in mind that mainframe MIPS tend to be more productive than server MIPS because mainframe processors are typically in use 24 hours a day, while companies confine server use to business hours. (If you'd like to do your own calculations, see page 101.)

If the decision based on these costs is too close to call, storage requirements and maintenance/support costs can be tiebreakers. The rule of thumb here is that client/server gets the edge with storage (client/server storage, at $2,000 per gigabyte, is about half the cost of mainframe direct-access storage devices). Mainframe computing, for its part, tends to do better in the support cost area.

However, even with its lower cost per gigabyte, storage in the client/server world is not always a best bet because the technology is not yet sophisticated enough to exploit the cost advantage. While mainframe disk management systems let companies implement databases that reside on tens or even hundreds of disk drives, server technology requires the entire database to reside on a single disk drive. Essentially, the data is there but can't be used very easily.

Client/server, *page 101*



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The entire community seems to want tickets to this year's NeXTWORLD Expo, and no wonder. Our Second Annual Expo kicks off May 25 with the most important event in NeXT's history. The release of the shrink-wrapped NeXTSTEP software for Intel processors. It's a don't-miss-it opportunity to experience object-oriented computing, and what's been called "the most respected piece of software on the planet,"* on industry-standard computers. **STEVE JOBS AND ANDY GROVE, KEYNOTES.** Besides seeing the release, you'll also be given insight into it by the two people best equipped to talk about it—NeXT Chairman Steve Jobs, and Intel Chairman Andy Grove. They'll give the two keynote speeches. **THREE EVENTS IN ONE.** In addition to the all-important product release, the Expo consists of a Worldwide Developer's Conference featuring numerous industry luminaries; the annual User Conference and User Group Program; and a Product Exposition with over 100 exhibitors. All are key events for the object-oriented computing community. **$2500 DEVELOPER DISCOUNT.** Two major discounts give you added incentive to attend. If you attend the Developer Conference, you're eligible for a special bundle. For $300** and your $695 Admission Fee, you'll get not just admission, but a copy of NeXTSTEP for Intel Processors User Environment and NeXTSTEP Developer. Register now as space is limited. **50% SOFTWARE DISCOUNT.** In addition, everyone attending any part of the Expo will be eligible for a 50% discount on the purchase of NeXTSTEP software products. **CALL NOW.** For information or to register, call 1(800)767-2336 today. But whatever you do, be sure you've got a ticket.

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A1ZTWC

Client/server

CONTINUED FROM PAGE 99

In terms of support, client/server is going to take about 20% to 30% more out of IS' pockets. Client/server costs tend to be higher than those of mainframe computing for three reasons:

- Because client/server pushes computing out to end users, many companies find they need more troubleshooters and graphical user interface experts to provide on-site assistance at disparate locations. Often, support costs are hidden because end users actually do the support, to the detriment of their primary jobs.

Companies spending approximately $3,000 per user for client/server hardware and software shell out five times that for intangibles such as peer and help desk support.

In contrast, mainframe end-user support is minimal, consisting typically of a help desk or dumb terminal replacement/upgrade.

Face-off

What mainframes have over client/server:

- They cost less in environments with a lot of terminals and modest computing needs.
- Greater security.
- Easier enterprisewide communications.
- IS can more easily manage centrally controlled environment with available software.
- Support and disaster recovery is simpler.
- Network management is easier and more secure.
- Skilled mainframe staff is available.

What client/server has over mainframes:

- Computing power (MIPS) costs less.
- Access to computing power is easier.

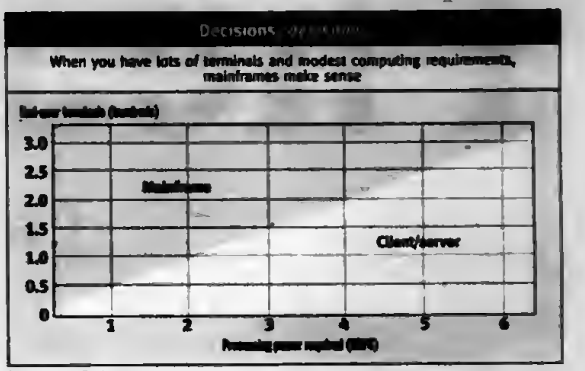
- Client/server systems software is layered and has a variety of interfaces. Companies have to make provisions for lots of communications/connectivity packages. Network and communications links cry out for management. Hardware and software products need technical and staff support.

So, while annual lease costs of mainframe software can be steep, depending on the size of the platform and upgrade fees, they aren't necessarily higher than costs in client/server. Client/server software racks up support costs that diminish its monetary advantage over large systems.

- Client/server is a new area, so there are few professionals experienced in managing and supporting client/server operations. Training costs to bring people up to speed are immense.

Because mainframe technology is mature, it is easier to hire people experienced in handling that environment. And these staff members get a hand from the variety of management tools for mainframes. There are existing products that handle areas such as system automation, performance monitoring/capacity planning, scheduling/rerun control, print management, library management, tape management, disk management and security.

In the client/server world, such tools are nonexistent or too young to be very effective.



Source: Arthur D. Little, Inc.

Enterprise connectivity

Costs aren't the only reason why IS managers stay with large systems. They also rely on the mainframe's central control, standards and security measures for their mission-critical applications.

For instance, IBM's Systems Network Architecture, with its features for central oversight and control, has been one way in which large IS shops provide uninterrupted information flow. Employees in different functional areas can share information without hassles.

Client/server can sometimes clog the information pipe because of the number of computing elements it requires. One recent demonstration of interoperability among four different computing platforms required 50 communications software packages!

Companies want to reduce complexity, not create it. Besides staying with mainframe computing, they also try the following if client/server doesn't cut it:

- Departmental computers (midrange systems) that store data primarily used in each department. If another department has occasional demand for data, its computers initiate the request via a data link to the departmental computer containing the target data.
- Data on a series of specialized database servers connected by local-area networks.

. . . . . .

IS chiefs are looking for ways to balance out the picture usually tilted in favor of client/server NOW and EVERYWHERE. They don't want to avoid client/server; they only want to avoid using a good technology for all the wrong reasons. •

Kennedy is a senior consultant who manages the corporate networking practice at Arthur D. Little, Inc. in Cambridge, Mass. Gurbaxani is a consultant in the corporate networking practice at Arthur D. Little.

Do your own number-crunching

An electric utility wanted to figure out its hardware costs for operating a customer information system that produces 3.4 million electric bills per month, 5 million notices per year and 2 million customer work orders per year. The system requires 9.1 MIPS and 40G bytes of DASD. There are 1,300 terminals.

It used the following equation:

(Cost of MIPS) + (cost of DASD) + (cost of terminals) = Total

Working under the assumption that dumb terminals cost one-third less than workstations, mainframe MIPS cost about 100 times more than workstation MIPS and mainframe storage costs twice as much as client/server storage, the organization figured its mainframe hardware cost would be the following:

($50,000 x 9.1) + ($4,000 x 40) + ($500 x 1,300) = $1,265,000

Its cost in client/server would be the following:

($500 x 3 x 9.1) + ($2,000 x 40) + ($1,500 x 1,300) = $2,043,650

Please note the adjustment in the cost of MIPS ($500 x 3 x 9.1) reflects the fact that mainframes are typically in use three times longer than workstations —24 hours a day vs. 8 hours a day, respectively.

IN THE REAL WORLD

Flying in the face of *client/server* computing

The story is familiar: The weak economy has put a company under extreme cost-cutting pressure. Management approaches the information systems department because it has "heard" something called client/server would decrease costs by X percent right away.

That's the situation facing IS at an electric utility serving one of the U.S.' largest urban areas.

The target application? A customer information system used to prepare bills for its 3.4 million customers and handle customer billing and service inquiries.

But when it came right down to it, IS found, client/server wouldn't do much in terms of cutting costs. For instance, the company would take a hit replacing its 1,300 terminals with workstations that were twice as expensive.

The mainframe was in its element: The organization had lots of terminals and low processing needs (the database uses CICS and consumes 11% of the mainframe's 83 MIPS).

IS' decision to stay with the mainframe, however, is not carved in stone. It has pledged to revisit client/server when business needs dictate changes to the functionality of the customer information system applications.

Preserving investments, *defusing* revolt with *gradual downsizing*

The nightmare for the university's IS group started with a few end users working on Apple Computer, Inc. Macintoshes. Before IS knew it, end users were moving off the mainframe and into workgroups of Macintoshes at their own expense. Departments were building their own systems, storing redundant copies of mainframe data and generating paper reports that had to be rekeyed into the mainframe.

Users were doing this for easier data access, screens they could navigate and quick return on printed reports.

At first, the administrative computing group was going to dump the 76-MIPS IBM 3090 mainframe and migrate applications to client/server platforms. Unfortunately, that move would have required a massive amount of resources: new hardware/software platforms, major application rewrites and staff training, recruiting and outplacement. It would have meant operations disruption (including compromising data security, backup and disaster recovery) and systems incompatibility. Of most concern was the lack of capacity planning and performance monitoring plaguing the client/server world.

How could they give users what they wanted without dropping a bomb into the IS shop? By selective and phased-in migration to client/server platforms. In this way, IS could preserve the mainframe investment and avoid the maintenance and operational risks involved in a wholesale changeover. But it could also ready itself for downsizing in the future.

The school is in the midst of a pilot to improve end-user reporting and provide better end-user tools, including GUIs.

The Results

Computerworld congratulates in the 1993 IS Brand on Local-Area Networks

Computerworld's IS Brand Preference Study on LOCAL-AREA NETWORKS

UPS

Best Technology	Best Power Technology
Best Price/Performance	American Power Conversion
Best Service/Support	Best Power Technology
Best Documentation	Best Power Technology
Prefer to Do Business With	American Power Conversion & Best Power Technology

PC Communications Software

Best Technology	Microsoft Corporation
Best Price/Performance	Datastorm Technology
Best Service/Support	Microsoft Corporation
Best Documentation	Microsoft Corporation
Prefer to Do Business With	Microsoft Corporation

Backup Hardware/Software

Best Technology	Exabyte
Best Price/Performance	Mountain Network Solutions
Best Service/Support	Mountain Network Solutions
Best Documentation	Mountain Network Solutions
Prefer to Do Business With	Mountain Network Solutions

RAID Storage Systems

Best Technology	Compaq
Best Price/Performance	Compaq & EMC Corp.
Best Service/Support	Hewlett-Packard
Best Documentation	Hewlett-Packard
Prefer to Do Business With	Hewlett-Packard

Electronic Mail/ Messaging Software

Best Technology	Lotus cc:Mail
Best Price/Performance	Lotus cc:Mail
Best Service/Support	IBM
Best Documentation	Lotus cc:Mail & WordPerfect Corp.
Prefer to Do Business With	IBM

Gateways

Best Technology	Novell
Best Price/Performance	Novell
Best Service/Support	Novell
Best Documentation	Novell
Prefer to Do Business With	Novell

Servers

Best Technology	Compaq
Best Price/Performance	Dell Computer
Best Service/Support	IBM
Best Documentation	IBM
Prefer to Do Business With	IBM

Bridges/ Routers

Best Technology	Cisco Systems
Best Price/Performance	3Com
Best Service/Support	IBM
Best Documentation	IBM
Prefer to Do Business With	IBM

Portable PC Network Adapters

Best Technology	Xircom
Best Price/Performance	Xircom
Best Service/Support	Xircom
Best Documentation	Xircom
Prefer to Do Business With	Xircom

Ethernet Adapters

Best Technology	3Com
Best Price/Performance	3Com
Best Service/Support	3Com
Best Documentation	3Com
Prefer to Do Business With	3Com

Token Ring Adapters

Best Technology	IBM
Best Price/Performance	3Com
Best Service/Support	IBM
Best Documentation	IBM
Prefer to Do Business With	IBM

Intelligent Wiring Hubs

Best Technology	IBM
Best Price/Performance	Synoptics Comm.
Best Service/Support	IBM
Best Documentation	IBM
Prefer to Do Business With	IBM

Network Analyzers

Best Technology	Novell
Best Price/Performance	Novell
Best Service/Support	Novell
Best Documentation	Novell
Prefer to Do Business With	Novell

Cabling Systems

Best Technology	AT&T
Best Price/Performance	AT&T
Best Service/Support	AT&T
Best Documentation	AT&T
Prefer to Do Business With	AT&T

Terminal Emulation

Best Technology	IBM
Best Price/Performance	Novell
Best Service/Support	IBM
Best Documentation	IBM
Prefer to Do Business With	IBM

Groupware/Integrated Office Systems

Best Technology	Lotus Notes
Best Price/Performance	WordPerfect
Best Service/Support	WordPerfect
Best Documentation	WordPerfect
Prefer to Do Business With	WordPerfect

Client-Server Operating Systems/ PC LAN Operating Systems

Best Technology	Novell Netware 3.x
Best Price/Performance	Novell Netware 3.x
Best Service/Support	Novell Netware 3.x
Best Documentation	Novell Netware 3.x
Prefer to Do Business With	Novell Netware 3.x

Peer-to-Peer Operating Systems

Best Technology	Microsoft Windows for Workgroups
Best Price/Performance	Microsoft Windows for Workgroups
Best Service/Support	Microsoft Windows for Workgroups
Best Documentation	Microsoft Windows for Workgroups
Prefer to Do Business With	Microsoft Windows for Workgroups

Are In...

these top ranking companies Preference Studies and Wide-Area Networks.

IS Brand Preference Study on WIDE-AREA NETWORKS

Common Carriers

Best Technology	AT&T
Best Price/Performance	AT&T
Best Service/Support	AT&T
Best Documentation	AT&T
Prefer to Do Business With	AT&T

Value-Added Carriers/Services

Best Technology	AT&T
Best Price/Performance	AT&T
Best Service/Support	AT&T
Best Documentation	AT&T
Prefer to Do Business With	AT&T

Satellite Carriers

Best Technology	AT&T Tridom
Best Price/Performance	AT&T Tridom
Best Service/Support	AT&T Tridom
Best Documentation	AT&T Tridom
Prefer to Do Business With	AT&T Tridom

V.32/V.32bis/V.42/V.42bis Modems

Best Technology	Hayes Microcomputer
Best Price/Performance	Hayes Microcomputer
Best Service/Support	Hayes Microcomputer
Best Documentation	Hayes Microcomputer
Prefer to Do Business With	Hayes Microcomputer

Facsimile Machines

Best Technology	Canon USA
Best Price/Performance	Panasonic
Best Service/Support	AT&T
Best Documentation	Panasonic
Prefer to Do Business With	Canon USA

Facsimile Boards/Gateways

Best Technology	Intel
Best Price/Performance	Hayes Microcomputer & Intel
Best Service/Support	Hayes Microcomputer
Best Documentation	Hayes Microcomputer
Prefer to Do Business With	Intel

T1/T3 Multiplexers

Best Technology	AT&T Paradyne
Best Price/Performance	AT&T Paradyne
Best Service/Support	AT&T Paradyne
Best Documentation	AT&T Paradyne
Prefer to Do Business With	AT&T Paradyne

Channel Extenders

Best Technology	IBM
Best Price/Performance	IBM
Best Service/Support	IBM
Best Documentation	IBM
Prefer to Do Business With	IBM

PBX Equipment

Best Technology	AT&T
Best Price/Performance	Northern Telecom
Best Service/Support	AT&T
Best Documentation	AT&T
Prefer to Do Business With	AT&T

Diagnostic/Test Equipment

Best Technology	Hewlett-Packard
Best Price/Performance	Hewlett-Packard
Best Service/Support	Hewlett-Packard
Best Documentation	Hewlett-Packard
Prefer to Do Business With	Hewlett-Packard

Packet Switches

Best Technology	Motorola/Codex & Northern Telecom
Best Price/Performance	Motorola/Codex
Best Service/Support	Northern Telecom
Best Documentation	Telematics
Prefer to Do Business With	Motorola/Codex & Northern Telecom & Sprint International

The 1993 IS Brand Preference Studies on Local-Area Networks and Wide- Area Networks were conducted among Computerworld subscribers to determine which brands of products are preferred among information systems professionals.

A brochure on each study is available. Contact your Computerworld sales representative for a copy or call Patty Faherty at 800-343-6474 ext. 169.

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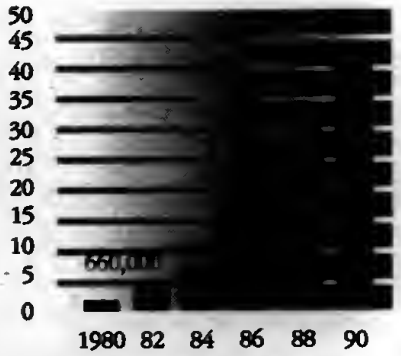
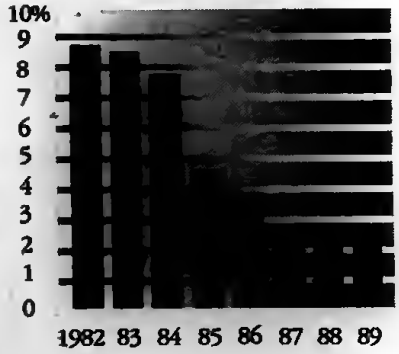


Fewer campus freshman are choosing computer careers**



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Digital Equip. Corp.	hardware	214,375
MVS	operating system	257,248
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Sources: *International Data Corporation **American Council on Education

Communication key to user relations

shooting TACTICS

By Leslie Goff

CERTAIN PROBLEMS seem to permeate many information systems/client relationships. Among them: the client's failure to assume ownership of a system or the IS department's failure to manage user expectations. Either can lead to myriad problems. But some user-support managers have found ways around such situations. The following strategies can help prevent these problems from recurring.

[illegible], director of [illegible], [illegible], N.J.

PROBLEM

The research organization refused to use a system it asked for.

"We got a request from one of the higher-ups in research to find a chemical structure drawing and cataloging system. We located one that would run on our platform — PCs and Macintoshes. The vendor was moving the package to PCs from the mainframe, so it seemed to fit us well. The user group assembled by the research department to select the system liked it and rushed it. But once it was installed, the project fell on its face because the users refused to use it."

PROBABLE CAUSE

Failure to assign the right people to the system selection group.

"We had this self-managed team trying to find a solution, but no one was ultimately accountable for the decision. They looked to us for final accountability, but we're just a service organization. We'll set it up for them, but they have to make time for it and use it."

SOLUTION

Involve IS in choosing the users who will work on the project.

"The team was formed solely from the research side. Now we're working to identify the members of the research group who have the functional expertise, the computer aptitude and the time to be on the team. The next team will comprise higher level employees, so that when they make a decision, it will be respected by the users."

RICHARD DYKEMAN, *user support services supervisor, city of Riverside, Calif.*

PROBLEM

Users in personnel are frustrated by a departmental local-area network that keeps crashing.

"The problem has been isolating the cause. It just intermittently locks up. It will slow down, then drop users. Even if it's only down a half hour, their work is all automated, so they can't just regroup and go back to manual processes."

PROBABLE CAUSE

A faulty network card.

"It seems to be a jabbering network card — one that broadcasts jibberish over the network. That takes up bandwidth so other units on the net lose throughput."

SOLUTION/PREVENTION

Respond to the situation immediately and keep users informed throughout the diagnostic process.

"Never ignore requests, and get visibility with the department as soon as it reports a problem. We should [also] follow up in writing — 'This was the problem and here's how we resolved it.' Now we do that verbally, but we should do it officially so they can keep track of things, too."

DAVID CIOLKOWSKI, *director of MIS, Abrams Bentsch Ritter, Inc./ Colliers International Property Consultants, New York*

PROBLEM

User claims a critical file is lost.

"That can be a sensitive situation depending on the user. If you challenge them, you are challenging their competence."

PROBABLE CAUSE

Lack of training.

"Getting users to training is probably the hardest thing to do, especially with administrative assistants, whose bosses don't want to part with them, or salesmen, who prefer to be out selling. People don't view training as their job."

SOLUTION/PREVENTION

Offer incentives to attend training.

"We used to offer classes. Now we're scheduling two daily one-on-one training sessions. [It's] working better because it allows for flexibility to cover whatever a particular user needs — how to use E-mail or how to use a particular feature their boss wants them to use. Users are more likely to show up for a one-on-one."

[illegible], project leader, Administrative Information Services, Columbia University, New York

PROBLEM

Resolving crises without creating hostility.

"When a user calls, they may be upset. They can say things they don't mean."

PROBABLE CAUSE

User may have unreasonable expectations of IS.

"Their expectation often is that the system should be up and running all the time. You can't always guarantee the system will be up 24 hours, but we want goodwill and [them] to come to us rather than go to an external provider."

SOLUTION/PREVENTION

Manage user expectations by instituting service-level agreements.

"If we know what they expect of us, and they know what we expect of them, it helps eliminate finger pointing. Get together with the user, discern what happened, get the problem in the hands of the right specialist and follow through. Problems will always happen, and we want to have an open environment."

Goff is a New York-based free-lance writer.

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- SS 7
- CD-ROM
- SYBASE
- POWERBUILDER
- COBOL II / JCL
- MICROFOCUS WORKBENCH
- WINDOWS, C or C++
- IBM ASSEMBLER/APPLICATIONS
- IBM, IMS or DB 2
- IBM, IDMS, FOCUS
- NOVELL, LAN, ONE
- BUSINESS BASIC
- COBOL Assembler
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Job outlook positive for POS professionals

By Alice Bredin

Some retailers have hired systems integrators or value-added resellers (VAR) to create packages that handle cash register functions, debit transactions and inventory. But for retailers writing their own software or customizing an off-the-shelf package, the demand for point-of-sale (POS) professionals who can program, analyze and manage is strong.

When companies say they need POS professionals, they are referring to those who provide support services to stores for the development, operation and maintenance of POS systems. Their efforts are showing up in many retail locations, including gas stations or grocery stores where customers can make purchases without cash by simply sweeping their bank card through a debit machine.

All of this automation, along with many back-room functions, indicates that POS systems are firmly entrenched in retailing.

The POS arena historically was burdened with a stigma that it pigeonholed information systems professionals because of limited technology. But retailers, like other businesses, are moving away from cumbersome mainframe systems toward systems that use PCs as controllers and are based on reduced instruction set computing all the way up to complex solutions using Sun Microsystems, Inc. machines. Vendors such as NCR Corp., IBM, CompuAdd and Siemens AG provide the bulk of systems to retailers.

"I would say anyone interested in POS should be proficient in C programming and networking implementation," says Thomas Friedman, editor of "Retail Systems Alert," a Newton, Mass.-based newsletter on retail automation, products and strategies.

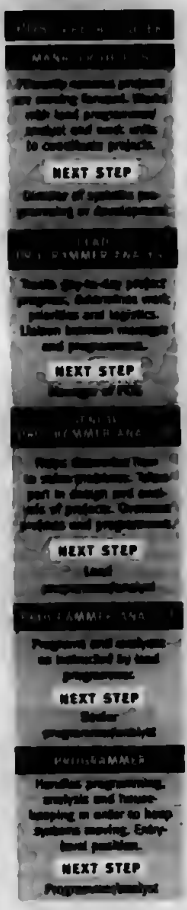
However, POS executives say that as the retail industry becomes more sophisticated this is no longer true.

Where the jobs are

The growth areas for POS jobs are grocery stores, discount stores and operations that deal in a specific category of merchandise, such as The Home Depot, Inc., which specializes in hardware. These stores are transaction-intensive and need sophisticated systems such as POS debit cards, wireless, handheld price-auditing machines and automatic reorder capabilities to get customers out of the store as quickly as possible and to keep inventory stocked.

A retail background is not essential to obtaining an IS job developing POS systems.

Kathleen Dahlberg, vice president of worldwide restaurant systems at Burger King Corp. in Miami, joined the fast-food chain after working at companies as varied as Honeywell, Inc. and Rand McNally & Co. She says many of her staff have come from and gone to departments such as finance and local-area network integration.



But some managers say they want staff who have worked with POS systems behind the scenes and gained an understanding of what users need. Wearguard Corp., a mail-order firm for work clothing and uniforms in Norwell, Mass., creates the same kind of inventory reporting and sales information that traditional retail operations gather, even though its sales are done through the mail.

Wearguard has only one person supporting its in-house-developed system. But this person has worked in a store and as an operations person for a retailer. "It's important to understand the needs of the users because they are pretty computer-illiterate and can't always explain what they need," says Lynne D'Anbrea, project manager at Wearguard.

D'Anbrea is responsible for explaining inventory reports, billing reports and other reports to users.

Store experience lends an understanding of what store needs are and, ironically, adds to the pressure of the job. Some managers say that because some POS professionals started off as retail clerks and have experienced an in-store crisis when POS equipment fails, they feel tremendous responsibility to keep the system going, says Mike Hayden, manager of systems and programming of POS systems at Giant Food, Inc., a grocery chain in Landover, Md.

Bredin is a free-lance writer in New York.

The other market

Systems integrators and VARs that sell custom software and hardware configurations to retailers make up a growing area for POS jobs. These companies tend to have smaller staffs and require highly honed technical skills or a combination of retail and technical expertise.

At Business Systems Communications, a Pemberton, N.J., systems vendor for retailing that provides complete store-controlling environments for POS and back-office systems, there are three levels of personnel. Managers plan projects and set deadlines, programmers help plan and create packages, and testers make sure that the programs function. Because systems integrators' POS operations are smaller than POS departments at traditional retailers, job responsibilities tend to overlap. —*Alice Bredin*

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Telecom firms rising high in Lone Star State

By Emily Leinfuss

DALLAS AND AUSTIN, TEXAS, ARE sporting new names: The Telecom Corridor and The Silicon Prairie, respectively, in response to growing demand in these industries.

The overall market in Dallas is sluggish, but the city has earned the moniker The Telecom Corridor as a result of the influx of telecommunications firms there, including Northern Telecom, Inc., Intertel Telecom, GTE Telecom Network and Metropolitan Fiber Systems.

Telecommunications companies are moving to Dallas because it has no state tax and a lower cost of living than most major East and West Coast hubs.

Difficult search

But finding a job in Dallas is difficult due to a slow economy and a trend toward rightsizing technology and whole organizations, although there is action in the "client/server" area, according to John Stevenson, vice president of MIS at Dr Pepper/Seven-Up Cos. Information systems professionals in the area agree, claiming the hottest position in Dallas is a local-area network administrator.

A case in point is Great North American Cos., a direct marketer of computer and office supplies in Dallas. Harry Page, manager of applications programming at the company, says the proliferation of LANs has re-created a lot of the old mainframe security problems, and good LAN professionals are needed to resolve them.

But David Sisk, manager of information services at Campbell Taggart, Inc. in Dallas, the parent company for national wholesale bakeries, says, "There are a lot of people in the job market and not a lot of jobs to accommodate them." The city is still suffering from cuts made by its large employers, including Texas Instruments, Inc. in addition, he says, the impending layoffs at Dallas-based American Airlines don't bode well either.

Tale of two cities

While they're both hotbeds for high-tech employment, Austin and Dallas offer very different job markets. Metropolitan Dallas houses 18 Fortune 500 headquarters, according to the chamber of commerce. In comparison, the largest employer in Austin is the state and federal government, according to the Greater Austin Chamber of Commerce.

Austin is similar to Dallas in that it is also advertising for people with LAN skills, says Sally Quereau, manager of applications programming at the Texas State Treasury Department in Austin.

Jim Steele, IS director at the Lower Colorado River Authority in Austin, says he has a tough time finding people with good network skills, especially "someone who really understands capacity planning and how local-area networks are put together."

However, Austin's needs are different because it has many developer jobs at software companies, as opposed to the more traditional IS jobs in Dallas, says John O'Keefe, a partner at the Austin IS placement firm, O'Keefe and Associates.

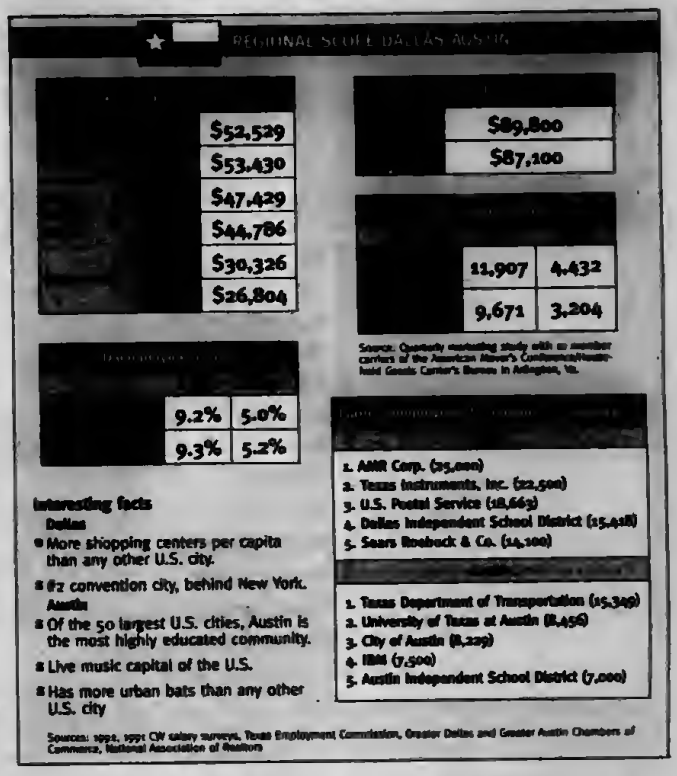
The Silicon Prairie is a growing research, development and high-tech area spawned by the presence of development laboratories that manufacture parts of IBM's AIX and OS/2, the vendor consortium Microelectronics Computer Corp. and Dell Computer Corp. The emerging firms employ 65% of Austin's manufacturing work force.

"There are not a lot of jobs for people in data processing in Austin, but the software vendors are doing development in Unix, Windows and object-oriented technologies, creating a demand for professionals with those skills," O'Keefe says.

Austin's economy seems to be recovering faster than Dallas', but it is a much smaller job market and has far less turnover.

"Austin is not a business center like Dallas, but it is a difficult market to get into. Competition for jobs in Austin is very tough due to the destrability of the city," says Donna Schuback, vice president of IS placement firm Datapro Personnel Consultants, Inc. in Dallas.

Leinfuss is a free-lance writer based in Sarasota, Fla.



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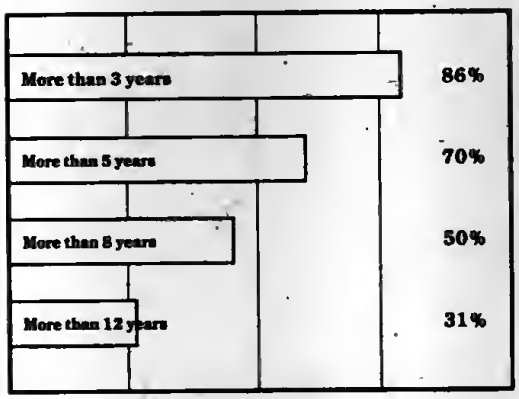

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Selected candidate will be responsible for operating system management, system tuning and troubleshooting, database administration, general technical support of project team members, and applications programming for Distribution Center Control System projects. Requires a BSCS or equivalent and at least 3 years' experience in AS/400 operating system management, hardware and software configuration, troubleshooting and tuning; AS/400 database design and administration; AS/400 communications including Token-Ring, APPC, APPN, and PC support/400. A minimum 2 years' experience in design, development, and installation of interactive industrial applications is essential. Knowledge of Distribution applications preferred.

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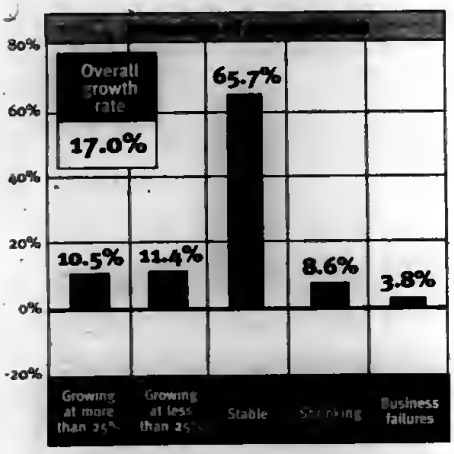

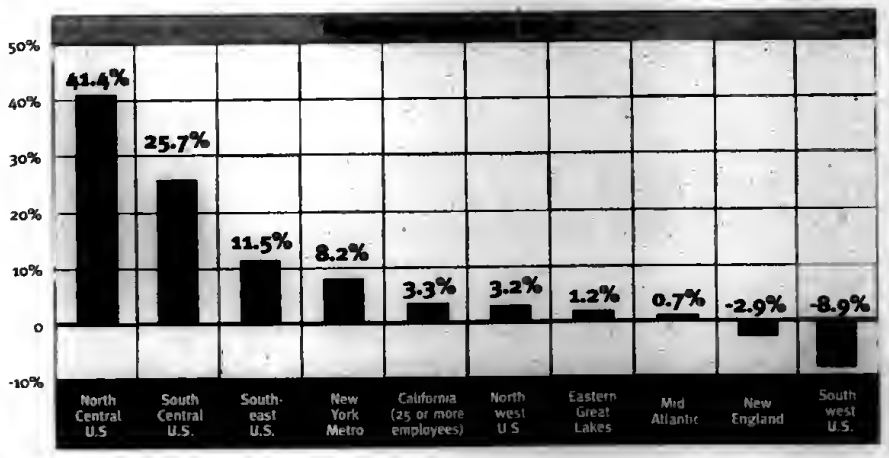

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SURVEY PERIOD: SEPT. '92 – MARCH '93

Mainframe leases DON'T WORK for PCs

Leased PCs require a flexible agreement. Adding the following provisions to a lease will increase your rights.

playing it SAFE

By Timothy E. Duncan

"DON'T DO IT" IS THE advice that one Fortune 500 chief information officer would give to anyone considering leasing PCs or workstations. His company, like many others in recent years, has had several costly leasing experiences and now purchases almost all of its PCs and workstations outright.

Unfortunately, purchasing isn't always possible, especially if your capital budget is running on empty or if your company considers leasing a valuable financing tool. Leasing PCs can work for you, but only if potential problems are recognized and dealt with before a lease is signed.

What creates trouble for a lot of companies is that, while the leasing business has changed, the contracts have not.

Ten years ago, about 90% of high-tech leases were for mainframes and peripherals. These large systems were kept in climate-controlled glass houses, and when the lease was up, the equipment was easily located and returned to the lessor in the same condition it arrived.

Now, PC leasing is on the rise, and users treat these machines as if they own them — adding memory and video cards, or reconfiguring them to suit their needs. Unfortunately, most lessors don't tolerate modifications, unless they're specifically provided for in the lease.

If you've decided to lease PCs, the best advice is to review the lease with your attorneys and consider adding the following provisions. Remember that the entire leasing transaction is defined in the lease agreement and nowhere else. If it is not in the lease, it is not part of the deal.

Right to purchase. At the end of a lease, it is often almost impossible to retrieve PCs from users and return them to the leasing company. In fact, one major independent leasing company's return rate is lower than 1%. When equipment is not returned, you are at the mercy of your lessor, which can potentially charge you any amount for the PCs or even sue you.

If you anticipate having a difficult time rounding up your leased PCs, insist on adding a lease provision that gives you the right to purchase the equipment at the end of the lease or at periodic points during the lease.

All purchase options should be for the lower of a previously agreed price or fair market value and apply to all or part of the equipment.

Right to modify. Most lease agreements restrict equipment modification. However, as long as it does not materially diminish the value of the equipment, the lessee should have the right to add cards, change configurations and do anything else to keep the equipment functional.

Right to relocate. Most agreements don't allow the equipment to be moved from the original location stated in the lease. Negotiate a lease that gives you the right to freely move the equipment anywhere in the country as long as the lessor is notified. This should also allow portables to be moved anywhere, provided they are returned to a central location at the end of the lease.

Right to return identical equipment. Normally, PC leases involve many identical or nearly identical units, and often, a large project may involve owned equipment and equipment that is leased from several companies.

For maximum flexibility, request that your lessor accept equipment that is identical to the original equipment at the end of a lease.

Right to replace. If leased equipment is lost, stolen or destroyed, most leases require the lessee to either replace the equipment or pay a stipulated loss charge.

When leasing PCs, the lessee should always insist on the right to replace the equipment because prices for older PCs will almost always be less than stipulated loss amounts.

JUST ASK

When researching a lease, most companies are concerned only with the lease rate. Asking lessors for the following information, however, will help in evaluating different requests for proposals:

1. Monthly or quarterly lease rates expressed as a percentage of the equipment cost.
2. Purchase option prices at the end of the lease and for quarterly or semiannual points during the lease.
3. Restrictions that will be imposed when upgrading or relocating the equipment.

Duncan is an attorney and president of Duncan Resource Group, a Boston-based advisory firm that assists companies with purchasing, leasing and financing high-tech equipment.

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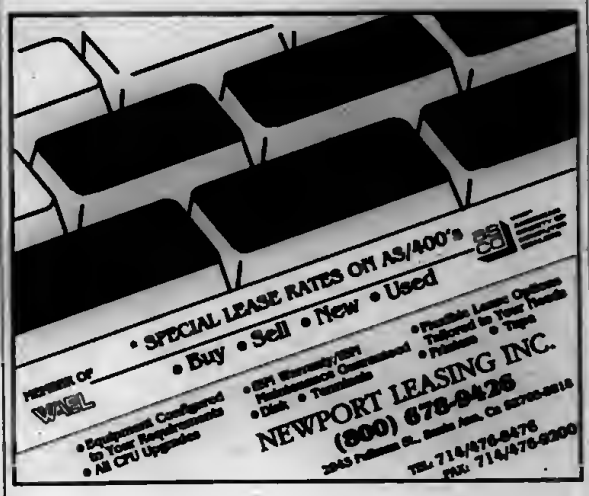

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Week ending April 9, 1993

	Closing Prices BoCoEx	Closing Prices AmCoEx
IBM AT 339	$350	$450
PS/2 Model 30 286	$400	$450
PS/2 Model 55SX	$750	$775
ThinkPad 300	$1,400	$1,475
PS/2 Model 90-011J	$1,700	$2,050
PS/2 Model 95-QIF	$3,000	$3,050
Compaq Portable II	$225	$300
Portable III	$350	$400
Portable 386	$650	$750
SLT-286	$625	$650
LTE-286	$675	$750
DeskPro 486/33i	$1,850	$1,750
Apple Macintosh SE	$625	$600
IICX	$1,600	$1,500
IICI	$2,250	$2,150
IIFX	$2,800	$2,450
Quadra 700	$3,250	$2,600

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Government	62,291
Utilities, Communications Systems, Transportation Services	58,516
Mining, Construction, Petroleum & Refining	17,618
Manufacturers of Computers & Peripherals	63,550
Systems Integrators, VARs, Computer Service Bureaus and Consulting	100,673
Computer Dealer, Distributor, or Retailer	16,989
Other	28,313
Total	**629,204**

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RFP #	DATE/TIME
2-01-93052-0	5/20/93, 4PM

FOR: Development of Technical Standard Operating Procedures Manuals

RFP #	DATE/TIME
2-01-93033-0	5/26/93, 4PM

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RFP No. 2385, due Mon. 5/17/93 at 3:30 p.m. for hardware, software and technical services needed to fully implement two local area networks for the MS DEPARTMENT OF ENVIRONMENTAL QUALITY. Charge $10.00.

RFP No. 2386, due Tues. 5/18/93 at 3:30 p.m. for various mainframe based software licenses for the STATE COMPUTER CENTER and the DEPARTMENT OF HUMAN SERVICES. Charge $10.00

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Specs for RFPs with a charge may be obtained by submitting a written request with correct payment. No phone requests. Valid payments are corporate checks on a MS bank, certified check or POSTAL money order made out to Central Data Processing Authority. No cash or out-of-state-checks. For RFPs with no charge call Kelli Brown @ 601-359-2604. If you would like to pick up RFPs at CDPA, do so between 1:00-3:00 p.m. daily. CDPA reserves the right to reject any and all bids and proposals and to waive informalities.

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Gainers / Losers

Percent

Gainers		Losers	
Meca Software (H)	33.3	MathSoft (L)	-33.4
Camber Corp. (L)	24.1	Network Computing Devices	-29.4
Phoenix Technologies	18.4	Group 1 Software	-23.0
Powersoft (L)	16.6	Gateway Communications	-18.2
Computer Horizons	14.3	Legent Corp.	-10.1
Wang Labs Inc. (H)	14.3	Wordstar	-15.8
Xircom	14.1	Microcom Inc.	-14.3
Tandem Computers Inc.	13.8	Computervision Corp.	-14.3

Dollar

Gainers		Losers	
Synoptics Communications (H)	9.50	Legent Corp.	-6.73
ITT Corp. (H)	4.63	MathSoft (L)	-4.38
Southwestern Bell Corp.	4.38	Analysts Int'l	-4.00
Powersoft (L)	4.25	Network Computing Devices	-3.75
3M Corp (H)	4.13	Group 1 Software	-3.50
Matsushita Electronics (H)	3.50	Progress Software Corp.	-3.00
Sybase Inc.	3.25	Boole & Babbage	-2.75
Micro Focus	3.00	Peoplesoft	-2.75

[redacted]

Still going. . . .

The volume of computer industry companies going public remained steady in the most recent quarter, according to Houston-based Sommers & Associates, Inc.

Nineteen computer companies rendered their initial public offerings (IPO) in the first quarter, the same number as in the last quarter of 1992. The IPOs yielded $508 million, 7% less than the previous quarter's $549 million total. The largest single first-quarter offering belonged to Wall Data, Inc. (WALL) at $57.6 million. The previous quarter featured Compuware Corp.'s (CPWR) $144.3 million IPO.

High-tech offerings benefited from continued IPO momentum across all markets, according to Thomas Sommers, president of the investor relations firm. IPOs netted a record $11.6 billion in the quarter. Many firms jumped into the market to stay ahead of possible unfavorable market reactions to new budget and tax plans, Sommers said.

Caution flags should be raised for investors, however, because of several recent crashes. Networking vendor NetWorth (NWTH), which has been public since last November, dropped more than 40% last Wednesday. NetWorth joins software companies **McAfee Associates** (MCAF) and **MathSoft, Inc.** (MATH) as recent IPOs that zoomed up and subsequently took a nosedive.

Several other issues that debuted in the first quarter are trading well below their highs.

—Derek Slater

Trading down

Selected first-quarter initial public offerings (IPO) in the computer industry with their high-water marks and current values

MathSoft, Inc.	$13	23	7 3/4
Powersoft Corp.	$20	40	32 1/2
Gupta Corp.	$18	35 1/4	21
Boca Research, Inc.	$10	13 3/4	12
Avid Technology, Inc.	$20	27 1/2	19 3/4
Intuit, Inc.	$20	33	25 1/2
Wall Data, Inc.	$20	26	18 1/4
Tricord Systems, Inc.	$11	15 1/4	15
Parallan Computer, Inc.	$12	14	12 1/2
Brock Control Systems, Inc.	$11	13 3/4	13 3/8

Source: Sommers & Associates, Inc.

Communications and Network Services

Exch	52-Week Range		Company	April 16 3 pm	Wk Net Change	Wk Pct Change
OTC	36.75	9.61	3 COM Corp.	50.00	-1.00	-3.1
NYS	29.25	60.13	American Info Techs Corp. (H)	29.25	2.38	3.1
NYS	60.25	40.63	AT&T (H)	59.88	1.25	2.1
OTC	3.58	0.75	Artel Communication Corp	2.31	0.06	2.8
OTC	24.50	10.25	Banyan Systems Inc.	14.75	0.00	0.0
NYS	56.75	42.13	Bell Atlantic Corp	54.63	0.25	0.3
NYS	57.50	45.13	BellSouth Corp	56.75	1.50	2.7
NYS	6.25	3.63	Bolt, Beranek & Newman	5.13	0.00	0.0
OTC	18.50	9.75	Brooktrout Technology	11.50	-0.50	-4.3
NYS	92.25	42.13	Cabletron Systems	89.13	1.50	1.7
OTC	34.50	17.75	Chipcom Corp.	32.50	2.00	6.8
OTC	48.25	16.50	Cisco Systems Inc	44.50	0.88	2.0
OTC	22.00	5.50	Compression Labs Inc	9.13	-0.88	-8.8
OTC	4.63	0.88	Data Switch Corp	3.94	0.00	0.0
NYS	22.13	13.25	Digital Comm. Assoc.	13.73	-1.13	-7.6
OTC	12.75	6.00	Digital Systems Int'l Inc.	6.00	0.00	0.0
OTC	29.88	4.00	DSC Communications	29.88	2.23	8.1
OTC	9.50	4.75	Fibronix Int'l Inc.	6.75	-0.38	-5.3
OTC	28.50	8.75	FileNet Corp.	10.75	0.23	2.3
OTC	4.38	1.50	Gandalf Technologies Inc	3.00	-0.13	-4.0
OTC	2.06	0.69	Gateway Communications	1.13	-0.25	-18.2
NYS	11.50	2.88	General DataComm Inds	9.13	-0.88	-8.8
ASE	4.13	2.00	Go Video	2.31	-0.19	-7.5
NYS	37.75	30.63	GTE Corp.	36.00	-0.63	-1.7
NYS	83.25	42.50	ITT Corp. (H)	83.25	4.63	5.9
OTC	49.25	29.88	MCI Communications Corp. (H)	47.00	1.23	2.7
OTC	12.00	2.25	Microcom Inc.	3.75	-0.63	-14.3
OTC	24.23	4.75	Netrix Corp	8.00	-0.13	-2.0
OTC	19.00	9.00	Network Computing Devices	9.00	3.75	-29.4
NYS	13.38	5.75	Network Equipment Tech. (L)	5.73	-0.38	-6.2
OTC	23.23	8.00	Network General	10.75	0.00	0.0
OTC	13.73	8.50	Network Systems Corp	9.13	0.00	0.0
OTC	64.00	11.63	Newbridge Networks Corp	59.23	1.00	1.2
NYS	47.61	30.50	Northern Telecom Ltd	34.23	-2.25	-8.1
OTC	35.25	22.50	Novell Inc.	31.88	-0.13	-0.4
NYS	92.50	74.00	Nynex Corp.	89.88	-0.13	-0.1
OTC	30.00	14.50	Octel Communications Corp	20.63	-0.88	-4.1
OTC	7.00	3.38	Penril DataComm Networks	4.25	-0.23	-5.6
OTC	40.50	10.25	PictureTel Corp.	16.00	-1.23	-7.2
OTC	15.75	5.75	Proteon Inc.	5.75	-0.23	-4.2
NYS	30.38	10.16	Scientific Atlanta Inc.	24.75	0.23	1.0
NYS	80.75	58.38	Southwestern Bell Corp	80.75	6.38	5.7
NYS	32.75	21.00	Sprint Corp. (H)	32.75	0.75	2.3
OTC	27.00	8.73	Standard Microsystems Corp	14.75	-0.63	-8.1
OTC	18.50	4.88	Stratacom Inc.	11.50	-1.00	-8.0
OTC	107.50	19.38	Synoptics Communications (H)	106.75	9.50	9.8
OTC	7.13	4.25	Telebit Corp.	4.63	0.00	0.0
OTC	9.38	2.13	Telematics Int'l Inc	7.11	0.00	0.0
OTC	25.50	13.38	US Robotics	21.00	2.00	10.5
NYS	44.00	34.13	U S West Inc. (H)	43.50	0.63	1.3
OTC	46.00	12.00	Wellfleet Communications	42.23	-0.13	-0.3
OTC	21.50	7.00	Xircom	9.13	1.13	14.1

PCs and Workstations

Exch	52-Week Range		Company	April 16 3 pm	Wk Net Change	Wk Pct Change
OTC	7.35	2.75	Advanced Logic Research	2.88	-0.13	-4.2
OTC	65.35	61.50	Apple Computer Inc.	48.50	-1.23	-2.3
OTC	24.75	11.25	AST Research Inc.	13.38	0.13	0.9
NYS	13.63	4.38	Commodore Int'l (L)	4.50	-0.38	-7.7
NYS	18.50	22.25	Compaq Computer Corp.	51.13	2.23	4.6
OTC	49.88	15.00	Dell Computer Corp.	31.75	-0.38	-1.2
NYS	82.88	50.25	Hewlett Packard Co.	73.75	-0.88	-1.2
NYS	31.00	16.13	Silicon Graphics	27.50	1.75	6.8
OTC	41.00	22.50	Sun Microsystems Inc.	27.00	-1.88	-6.3
NYS	32.13	22.25	Tandy Corp.	29.38	-0.38	-1.3
OTC	12.75	2.75	Zeos International Ltd.	4.50	-0.38	-7.7

Large Systems

Exch	52-Week Range		Company	April 16 3 pm	Wk Net Change	Wk Pct Change
ASE	18.38	5.88	Amdahl Corp	5.88	-0.13	-2.1
NYS	10.63	4.25	Convex Computer (L)	4.63	-0.11	-2.6
OTC	6.13	1.88	Cray Computer	3.13	0.38	13.6
NYS	40.75	19.00	Cray Research Inc.	22.75	0.11	0.5
NYS	13.88	7.13	Data General Corp.	10.63	-0.50	-4.5
NYS	49.25	30.38	Digital Equipment Corp.	41.13	-0.13	-0.3
NYS	38.63	26.63	Harris Corp.	37.63	0.13	0.3
NYS	100.38	45.88	IBM	48.88	-2.75	-4.6
OTC	22.00	5.50	Kendall Square Research	16.13	-0.13	-0.8
NYS	122.00	83.00	Matsushita Electronics (H)	121.00	3.50	3.0
OTC	12.00	6.00	Pyramid Technology	13.00	0.50	4.0
OTC	24.00	11.13	Sequent Computer Sys.	17.13	-1.25	-6.8
OTC	16.38	1.38	Sequoia Systems Inc	2.50	-0.13	-4.8
NYS	49.50	29.50	Stratus Computer Inc	32.75	-1.50	-4.4
NYS	16.88	9.88	Tandem Computers Inc.	12.38	1.50	13.8
NYS	13.88	7.75	Unisys Corp	13.25	0.13	1.0
ASE	3.13	0.08	Wang Labs Inc. (H)	0.50	0.06	14.2

Software

Exch	52-Week Range		Company	April 16 3 pm	Wk Net Change	Wk Pct Change
OTC	49.23	25.25	Adobe Systems Inc	44.25	2.50	6.0
OTC	22.25	10.25	Aldus Corp	17.00	-0.75	-4.2
OTC	16.63	5.63	American Software Inc.	7.00	-0.50	-6.2
OTC	28.13	9.75	Ask Computer Systems	13.25	-0.50	-3.6
OTC	56.50	27.75	Autodesk Inc.	41.75	0.13	-0.3
OTC	13.00	3.50	Bachman Info. Systems	3.50	-0.25	-6.7
OTC	43.00	34.75	BGS Systems Inc	38.75	1.13	3.0
OTC	84.13	37.23	BMC Software Inc.	44.25	-0.38	-0.8
OTC	28.23	17.00	Boole & Babbage	24.00	2.73	-10.3
OTC	55.23	17.50	Borland Int'l Inc.	19.75	0.50	2.6
OTC	6.50	3.00	CE Software	3.50	-0.25	-6.7
ASE	23.34	6.25	Cheyenne Software Inc	25.88	1.79	8.9
OTC	19.50	6.25	ChipSoft	10.08	0.23	2.6
OTC	9.75	5.63	Cognos Inc.	6.50	-0.38	-5.5
NYS	27.38	10.88	Computer Associates	23.13	0.00	0.0
NYS	12.38	3.75	Computervision Corp	3.75	-0.63	-14.3
OTC	34.25	19.25	Compuware Corp. (L)	24.00	0.75	3.2
OTC	15.75	6.50	Comshare Inc. (L)	7.63	0.88	13.0
OTC	12.25	10.75	Corel Corp	16.73	-0.11	-0.8
OTC	30.00	6.00	Easel Corp	8.00	-1.00	-11.1
OTC	25.25	12.00	4th Dimension	30.23	-0.25	-1.2
OTC	23.50	4.61	Frame Technology	6.63	-1.00	-13.1
OTC	20.75	14.50	Group 1 Software	10.50	-3.50	-23.0
OTC	35.23	25.00	Gupta	22.63	0.38	1.7
OTC	8.75	3.50	Hogan Systems Inc.	7.13	0.50	7.3
OTC	25.75	11.25	IMRS (L)	12.38	0.11	1.0
OTC	34.75	18.50	Information Resources	29.13	-0.63	-2.1
OTC	42.00	12.13	Informix Corp.	29.75	-0.25	-0.8
OTC	18.50	10.63	Intergraph Corp	10.63	0.38	3.2
OTC	13.63	7.25	Interleaf Inc	8.88	0.63	7.6
OTC	18.00	4.75	Intersolv Inc	2.00	-0.29	-3.4
OTC	16.75	9.25	KnowledgeWare Inc.	8.25	-0.50	-5.1
OTC	34.75	28.75	Legent Corp.	30.50	-6.73	-10.1
OTC	33.75	54.75	Lotus Development	25.50	-1.00	-3.8
OTC	23.00	8.00	MathSoft (L)	8.00	-4.38	-33.4
OTC	23.25	5.25	McAfee Associates	5.23	-0.25	-12.5
OTC	11.50	1.88	Meca Software (H)	11.50	2.88	33.3
OTC	15.25	3.25	Mentor Graphics	8.25	-0.50	-5.7
OTC	46.00	27.23	Micro Focus	34.00	3.00	9.7
OTC	20.50	4.38	Micrografx Inc. (L)	3.13	-0.25	-4.7
OTC	95.00	63.50	Microsoft Corp.	87.23	-1.75	-2.0
OTC	37.50	12.00	Oracle Corp.	33.38	-2.50	-7.0
OTC	31.88	13.38	Parametric Technology	36.00	0.50	2.0
OTC	40.50	22.50	PeopleSoft	29.00	-2.75	-8.7
OTC	10.23	3.50	Phoenix Technologies	5.63	0.88	18.4
OTC	40.00	28.50	Powersoft (L)	31.75	4.25	16.6
OTC	25.00	11.25	Platinum Technology	13.25	-0.63	-4.3
OTC	61.50	28.00	Progress Software Corp.	34.25	-3.00	-2.9
OTC	18.00	2.94	Quarterdeck Office Sys.	3.63	0.13	3.6
OTC	24.50	13.25	Rainbow Technologies Inc.	18.25	0.50	2.8
OTC	18.25	4.00	Rasterops	4.63	0.00	0.0
OTC	15.25	3.63	Ross Systems	11.63	-1.13	-8.8
OTC	22.25	8.50	Sapiens USA Inc.	25.75	2.50	10.8
OTC	18.50	6.75	Software Publishing Corp.	8.11	-0.13	-1.5
OTC	9.13	2.00	Software Toolworks Inc.	2.88	0.38	5.0
OTC	8.88	0.75	Spinnaker Software	1.63	-0.25	-13.3
OTC	12.75	3.23	State of the Art	10.00	-0.38	-3.6
NYS	24.63	13.73	Sterling Software Inc.	20.88	0.38	1.8
OTC	18.73	8.00	Struct. Dynamics Research	16.00	-0.63	-3.8
OTC	62.25	21.00	Sybase Inc.	33.50	3.25	6.2
OTC	44.25	5.88	Symantec Corp.	13.25	-0.13	-0.9
NYS	12.50	5.23	System Center Inc.	11.00	0.00	0.0
OTC	25.50	10.00	System Software Assoc.	12.23	-0.75	-3.8
OTC	8.88	2.50	Trinzic Corp	3.94	0.08	1.6
OTC	22.75	9.13	ViewLogic Systems	14.75	-1.00	-6.3
OTC	21.50	6.75	Walker Interactive Systems	7.50	-0.50	-6.3
OTC	3.38	1.38	Wordstar	2.00	-0.38	-15.8

Semiconductors

Exch	52-Week Range		Company	April 16 3 pm	Wk Net Change	Wk Pct Change
NYS	26.00	7.38	Advanced Micro Devices (H)	23.75	-1.25	5.0
NYS	21.38	9.00	Analog Devices Inc. (H)	30.00	6.25	1.3
OTC	20.50	7.63	Atmel Corp. (H)	20.38	1.25	9.4
OTC	9.38	3.11	Chips and Technologies	3.11	-0.50	-13.8
OTC	39.75	16.25	Cirrus Logic	30.50	-0.38	-1.8
NYS	12.38	7.38	Cypress Semiconductor Corp	50.00	0.13	1.3
NYS	16.12	7.00	Dallas Semiconductor	13.63	0.38	2.8
OTC	121.25	46.50	Intel Corp	110.75	-2.23	-2.0
NYS	14.13	4.88	LSI Logic Corp.	11.88	-0.50	-4.0
NYS	28.50	12.88	Micron Technology	20.63	-1.38	-6.3
NYS	24.88	37.13	Motorola Inc. (H)	21.50	2.75	4.0
NYS	14.13	8.50	National Semiconductor	12.88	-0.23	-1.9
OTC	18.50	8.25	Sierra Semiconductor	11.38	0.88	8.3
OTC	38.50	22.25	SynOpsys	32.50	0.00	0.0
NYS	63.38	32.25	Texas Instruments	54.50	-1.50	-2.2
OTC	8.88	6.00	VLSI Technology	6.63	-0.13	1.9
OTC	7.63	2.13	Weitek	5.63	0.13	2.3
ASE	9.63	3.50	Western Digital Corp.	3.13	0.25	3.1
OTC	37.50	14.50	Xilinx	31.88	-0.63	-1.9
OTC	27.84	12.50	Zilog Inc.	23.00	0.75	3.6

Peripherals and Subsystems

Exch	52-Week Range		Company	April 16 3 pm	Wk Net Change	Wk Pct Change
OTC	13.75	10.38	American Power Conversion	30.00	0.75	0.8
OTC	20.16	13.66	Banctec Inc.	16.75	0.25	1.3
OTC	18.00	6.25	Camber Corp. (L)	9.00	1.75	24.1
ASE	10.38	6.50	Cognitronics Corp. (L)	2.13	0.13	1.8
NYS	23.50	12.50	Conner Peripherals (L)	12.50	-0.25	2.0
OTC	38.50	10.75	Creative Technologies Inc.	29.00	1.75	6.4
OTC	30.75	10.25	Data Race Inc.	20.00	1.50	8.1
ASE	17.00	4.75	Dataram Corp.	8.88	-0.13	-1.6
NYS	20.25	8.16	EMC Corp.	25.00	0.23	1.0
OTC	10.50	5.38	Emulex Corp.	6.23	-0.63	-9.1
OTC	19.00	13.25	Evans & Sutherland	16.00	1.00	6.7
OTC	38.25	12.00	Exabyte	13.13	-1.23	-8.7
OTC	26.00	7.09	Intelligent Info. System	19.25	-0.50	2.3
OTC	8.88	3.88	Iomega Corp.	4.13	0.00	0.0
OTC	26.00	5.75	IPL Systems Inc.	6.25	-1.00	13.8
OTC	24.00	10.75	Komag Inc.	12.25	-1.00	-5.3
OTC	19.63	6.88	Maxtor Corp.	8.88	-0.23	-3.5
OTC	11.75	6.25	Micropolis Corp. (L)	4.25	-0.38	-5.7
NYS	113.00	92.00	3M Corp (H)	115.00	4.13	3.7
OTC	7.75	4.00	Printronix Inc.	7.00	-0.38	-5.1
NYS	17.13	8.88	QMS Inc.	16.25	0.75	4.8
OTC	17.88	11.75	Quantum Corp	12.13	-0.50	-4.0
OTC	12.75	3.50	Radius Inc	3.88	-0.13	-3.1
NYS	16.25	2.50	Recognition Equipment	13.88	1.23	9.9
OTC	13.88	5.50	Rexon Inc	6.23	0.00	0.0
OTC	22.38	12.00	Seagate Technology	13.50	-0.50	-3.6
NYS	59.75	18.00	Storage Technology	25.63	2.00	8.5
NYS	27.88	16.88	Tektronix Inc (H)	27.38	0.50	1.9
NYS	88.88	66.75	Xerox Corp	80.38	0.75	0.9

Services

Exch	52-Week Range		Company	April 16 3 pm	Wk Net Change	Wk Pct Change
OTC	21.50	12.66	American Mgmt. Systems	23.13	0.88	3.9
NYS	6.75	3.00	Anacomp Inc.	3.88	0.13	0.3
OTC	35.75	16.25	Analysts Int'l	23.73	-4.00	-13.4
NYS	56.13	38.75	Auto Data Processing	48.38	-1.50	3.0
NYS	17.25	9.41	Ceridian Corp.	15.13	-0.50	-3.2
NYS	17.38	12.50	Comdisco Inc.	15.38	-0.38	-2.6
OTC	8.66	4.50	Computer Horizons	8.00	1.00	14.3
NYS	80.50	57.00	Computer Sciences	75.13	-0.38	-0.5
NYS	8.63	6.88	Computer Task Group (L)	7.50	0.38	5.3
NYS	40.50	22.00	CompUSA Inc	30.50	0.38	1.7
OTC	12.50	4.00	Corporate Software	14.00	0.53	0.9
OTC	26.00	7.61	Egghead Discount Software	7.63	-0.63	-7.6
NYS	35.88	23.25	General Motors E (EDS)	32.00	1.63	3.3
OTC	25.50	9.25	Inacom Corp	17.50	-0.50	-2.8
OTC	15.38	6.25	Intelligent Electronics	12.75	-0.38	-2.9
OTC	14.38	6.63	Merisel	11.13	0.38	3.3
OTC	14.25	5.25	Microage Inc.	14.23	1.00	7.5
OTC	43.00	21.75	Paychex (H)	42.73	1.50	3.6
NYS	87.25	37.00	Policy Management Sys.	43.63	0.61	1.4
NYS	35.38	16.81	Reynolds and Reynolds	35.00	1.15	3.3
OTC	31.75	22.00	SEI Corp	20.50	0.25	0.8
OTC	24.38	16.88	Shared Medical Systems	20.50	0.00	0.0
OTC	13.88	5.73	SHL Systemhouse	10.88	-0.25	-2.2
OTC	29.23	10.25	Software Spectrum Inc.	23.38	1.13	5.1
OTC	33.73	21.29	SunGard Data Systems	31.00	-0.29	-0.8
NYS	4.00	1.13	Ultimate Corp	3.50	0.00	0.0

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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In Brief

Intel results soar

Riding a strong uptick in PC sales, Intel Corp. last week posted fiscal first-quarter net income of $547 million, an increase of 198% from the comparable period last year. Revenue in the period ended March 27 grew 63% to $2 billion, the Santa Clara, Calif., company said.

SynOptics growing

Net earnings at SynOptics Communications, Inc. rose 30% to $21.8 million in the first fiscal quarter ended April 2. Revenue at the internetworking company was $152 million, a 123% increase over the like period last year. The Santa Clara, Calif., firm attributed its growth to strong Token Ring and Ethernet sales.

ADP results up, again

Automatic Data Processing, Inc. posted fiscal third-quarter net earnings of $92.4 million, an increase of 14% from the comparable period last year. Revenue rose 12% to $612.9 million in the period, the Roseland, N.J., computer services company said.

Loss predicted

Bachman Information Systems, Inc. said that its revenue for the third fiscal quarter ended March 31 will fall below analysts' expectations. The firm also said the operating loss for that quarter will be greater than expected. Those results will be reported the week of April 26.

SHORT TAKES IBM has acquired Catapult, Inc., a Bellevue, Wash., provider of PC software training services. Catapult will operate as a separate subsidiary reporting to IBM's Skill Dynamics education and training company. . . . As expected, Digital Communications Associates, Inc. posted a $66.6 million fiscal third-quarter loss, on revenue of $55.7 million.

Coalition opposes FASB decision

By Gary H. Anthes
WASHINGTON, D.C.

■ The computer industry is gearing up for a trip to Capitol Hill in the wake of a tentative decision by the Financial Accounting Standards Board (FASB) to require companies to deduct from earnings the estimated value of stock options granted to employees.

The Coalition for American Equity Expansion (CAEE), a group of computer and biotechnology companies, argues that the change in accounting practice — which the FASB said would take effect in 1997 — would curtail the use of stock options, thereby inhibiting the firms' ability to attract and retain the best talent in risky ventures.

CAEE — a coalition of 19 companies including Apple Compnter, Inc., Compaq Computer Corp., IBM and Oracle Corp. — is drafting a bill tt hopes will be introduced in Congress this month.

The companies claim that stock options are vital for the competitiveness of U.S. industry. They are challenging a perception that stock options are reserved mostly for executives with six- and seven-figure incomes (see chart).

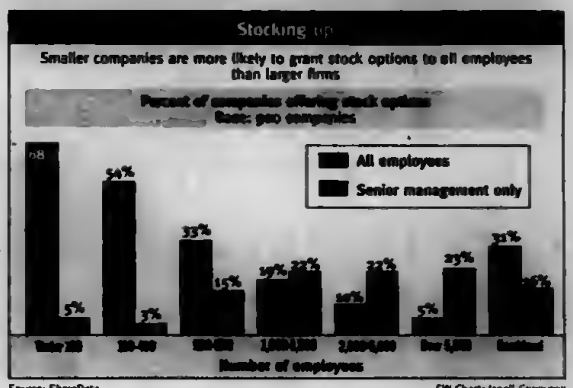
"We remember when we were in a garage," said Eric Ryan, director of taxes and economic development at Apple. "The people we were attracting — from Hewlett-Packard Co., Intel Corp., Fairchild and National Semiconductor Corp. — would not have joined the company but for the opportunity to participate in the equity side of the business."

Ryan said about 75% of all Apple employees now have stock options. He explained that the company evaluated various ways of accounting for stock options and found they would cut corporate earnings from very little to as much as 50%.

Ryan noted that Apple has no objection to an interim FASB requirement for greater financial disclosure by companies that grant stock options to executives.

CAEE's draft bill would include the following:

- Create a new form of stock option not taxable to employees at the time of grant or exercise and taxable at 50% of ordinary rates if sold two or more years after exercise.
- Direct the U.S. Securities and Exchange Commission to retain the current accounting treatment of fixed stock options and remove the charge to corporate earnings now required on variable stock options — those where the amount of the option is pegged to preset employee performance goals.



Source: ShareData

CW Chart: Janell Genovese

In a nutshell

The CAEE bill is intended to head off a bill from Sen. Carl Levin (D-Mich.) that, like the FASB proposal, would require firms to treat stock options as a cash contribution. Levin's bill is partly the result of public outcry over lavish executive compensation.

IMRS to push client/server

By Michael Vizard
STAMFORD, CONN.

Following its acquisition of financial accounting software from MAI Systems in February, IMRS, Inc. last week detailed a plan to become a player in the emerging client/server financial accounting market.

IMRS, which builds business reporting tools for DOS and Microsoft Corp. Windows, hopes to parlay MAI's client/server accounting software into a suite of accounting packages that include PC end-user tools packaged with a transaction-oriented accounting system.

The MAI package, which uses Sybase, Inc.'s relational database management system as a server, puts IMRS in competition with accounting software providers such as PeopleSoft, Inc., Computer Associates International, Inc., Dun & Bradstreet Software, Dodge Group and Ross Systems, Inc., according to Craig Bickley, director of product marketing at IMRS.

However, the MAI software supports only DOS clients, a shortcoming IMRS intends to resolve by adding Windows support in early 1994. IMRS said it will add Windows client support to the MAI suite of accounting modules and add SQL support to its Windows-based Hyperion reporting software at the same time. In addition, IMRS is working on porting Hyperion to Microsoft's Windows NT on both Intel Corp. and Digital Equipment Corp. Alpha AXP platforms sometime this year.

IMRS unveiled

Fiscal 1993 six-month sales: $25.2 million.

Fiscal 1993 six-month earnings: $2 million.

Employees: 350.

Founded: 1981.

Key Customers: Pepsico, Paramount Publishing, American Express Co., Bristol-Myers Squibb Co., Bally Manufacturing Corp., Burger King.

Wide open

Industry analysts said IMRS stands a decent chance of leveraging its installed base of PC software — 1,000 corporations — in its bid to become a force in the emerging client/server financial accounting market.

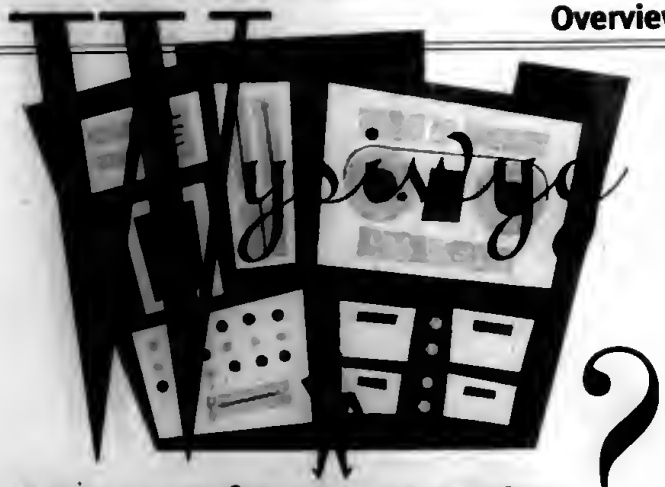
"The client/server application market is wide open. A lot of companies haven't delivered products yet, and the reality is that purchases woo't be made until 1994," said Peter Kastner, a vice president at Aberdeeo Group in Boston.

For example, Paramount Publishing in Englewood Cliffs, N.J., looked at replacing an accounting system from CA that runs on an IBM mainframe with a client/server package that supports Windows. However, all the packages Paramount looked at were missing some major components. Therefore, Paramount decided to augment its existing CA system with IMRS' Hyperion tool. That gave users a Windows tool to analyze data that is downloaded into Hyperion in an ASCII text file.

Pepsico, Inc. in Purchase, N.Y., also uses the Hyperion tools to provide users with a graphical view of data that is gleaned from 30 different general ledgers.

"We use Hyperion to consolidate data that is rekeyed from the different general-ledger packages. When IMRS adds the SQL interface to Hyperion, we'll probably move to standardize on general ledgers that support SQL," said Tim Calkins, senior systems analyst at Pepsico.

At that time, the IMRS offering will be evaluated alongside other general-ledger packages, Calkins said.



What was your first computer experience?

Ellen Gordon

President, Tootsie Roll Industries, Chicago

Ellen Gordon's first computer came from Radio Shack. At the time, she did not really know what it was, let alone the difference between hardware and software. She trained herself to use it by reading the manuals and even taught herself how to type. Back then, she didn't know anyone who owned or even used a computer. Now, she's addicted to technology.

Charles Darnell

Senior vice president and general manager, Lithonia Lighting, Conyers, Ga.

The first computer Charles Darnell programmed and maintained was the Univac 1107 in 1960 at the Warner Robins Air Force Base in Georgia. It was the largest machine of its kind under one roof — measuring almost 20,000 sq ft — and was used for the inventory, maintenance and flights of B-52 bombers. On hot summer days, Darnell and his co-workers played chess and ate lunch inside the water-cooled machine.

Gwen Bell

President of the Association for Computing Machinery, founding president of the Computer Museum, Boston

When Gwen Bell was a student at the University of New South Wales in Sydney, Australia, in 1958, she was invited into the computer lab by Fulbright scholar Gordon Bell. When she approached her computer — an English Electric Deuce with a CRT and keyboard — she found an unusual program. She worked the keys and punched a few codes and discovered that the unknown program was a marriage proposal crafted by Gordon Bell.

Compiled by Stefanie McCann

The Fifth Wave *by* Rich Tennant

Inside Lines

A Novell approach

Novell is asked to buy its [illegible] Software Transformation, Inc., a [illegible] tools maker in Cupertino, Calif. [illegible] and Power Up use Software Transformation [illegible] next System to build Intercept [illegible] Unix systems. Novell, [illegible] in other development companies but [illegible] buy [illegible] a firm outright, wants to use Software Transformation to produce tools [illegible] into the NetWare 4.0 kernel, according to a [illegible] source. NetWare "4.0 is really aimed at big client/server users, but users need applications to [illegible] Novell's intercept is to help people [illegible] source explained. Final papers are expected to be completed [illegible] in April; then the deal is subject to government and shareholder approval. Novell did not respond to inquiries.

Wireless [illegible]

In response [illegible] reliability of intercom-nesting fit nationwide [illegible] Cisco in development wireless interfaces for its routers. [illegible] the interfaces are cellular- or packet data-oriented wireless a spokesman said. Cisco spokesman's enigmatic response to whether the products are actually in the works: "We don't want to confirm or deny technologies that we may or may not be developing."

Another kind of voice mail

Octel Communications plans to put yet another "option" on its voice-mail systems: fax notification. The Milpitas, Calif., firm plans to announce a "fax processing" capability this week, sources said. Although users won't be able to hear their faxes read aloud, they will receive notification of a fax arrival on their voice mail. Then they can press a telephone button to get the fax printed, preventing their faxes from falling into the wrong hands. Looks like the voice-mail queue will be getting a little longer.

Getting graphic

Dell will push the local bus down to its mountain-oriented Precision line this week, sources close to the company said. Dell will use its own proprietary local-bus design. The Precision line will also start pulling through some merchant channels, including Sam's warehouses. The new Precision lines will all have Intel i486s in them, and pricing will start at $1,800, including a monitor.

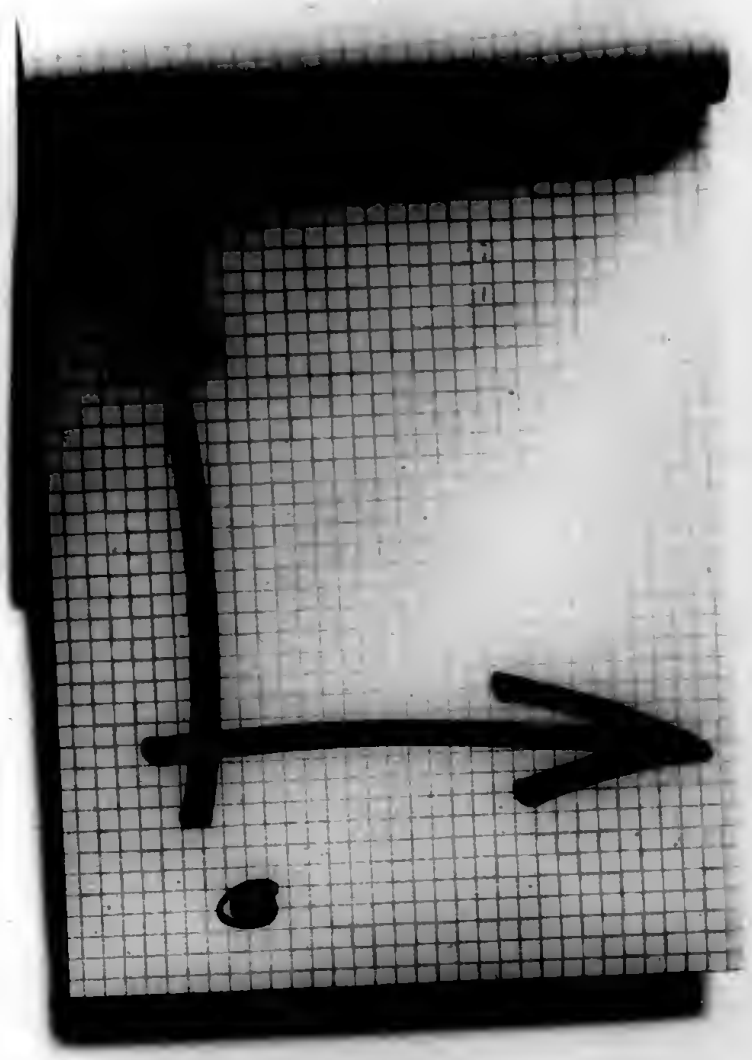
PSSTI Pen systems for sale, cheap!

No, it's not true that there were guys in the streets of Boston selling pen-based systems and real gold jewelry. But since NCR decided to dump its original pen-based systems, the same pricey ($3,000 plus) 3125 Notepad is available for $999 from JBM Computers, Inc., a Boston-based factory outlet. JBM is [illegible] in Fine Magazine, and a company representative [illegible] of [illegible]. He cautioned that one customer has ordered [illegible] 100 of the version with 4M bytes of RAM, which would clean JBM out, but that there are plenty of models with 8M bytes of RAM.

Across the universe

DEC is currently testing a gateway to heterogeneous databases, which is likely to ship by the end of the year, according to DEC sources. Comparable to AIX/Ingres' Ingresnet, DEC's database connector is built on the remnants of the Rdb/Star project, which was gutted last year.

Reporters on the line during a teleconference last week had to stifle laughs when Microsoft Chairman Bill Gates prefaced an answer to a question by saying, "We're not in the business of pronouncing products." How else did the market find out about Access, Windows NT, Chicago and Cairo long before they were more than code on a PC in Redmond? Phone, fax or Compuserve News Editor Alan Alper with news tips at (508) 879-0474, (508) 875-9931 or 70537,2413, respectively. Or try Computerworld's 24-hour voice-mail tip line at (508) 879-3555.



On The Excitement Scale, Where Does Managing Data In A Client/Server Environment Fall?

Okay, we'll admit data management lacks the sex appeal of GUIs and LANs. But we know how important it is to building successful client/server applications. In fact, the way you manage data ultimately determines both the integrity of your information and its availability. And isn't putting accurate information at your users' fingertips what client/server is all about?

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